

COMMERCIAL REFRIGERATION & AIR CONDITIONING

SEPTEMBER 1955



APPLIED AIR CONDITIONING

... is its potential limitless?

For Sale — Anti-Shutdown
Insurance Page 74

How 15 Horsepower
Saved 75 Page 48

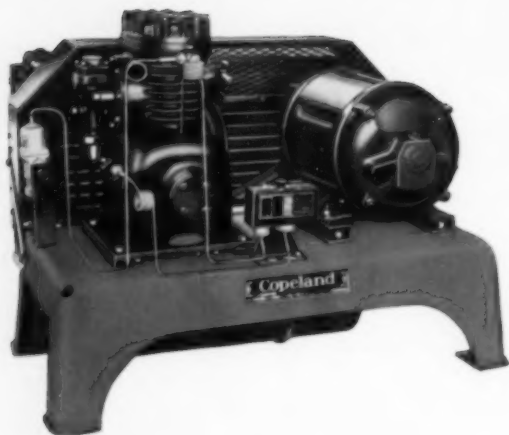
Air Conditioning
You Can't See ... Page 71

A New Profit-Making
Specialty Page 55

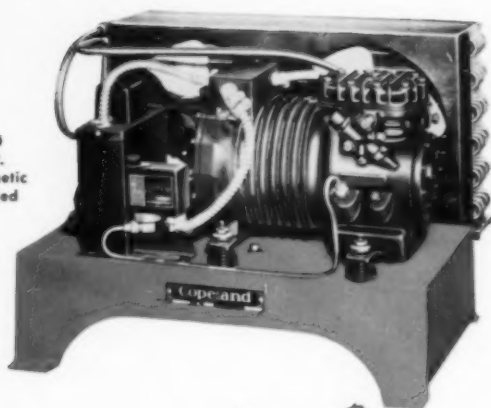
Five-Ton Unit Does a
40-Ton Job Page 73



OF THE INDUSTRIAL PUBLISHING GROUP



Z-100
1 H.P.
Copelametic
Air-cooled

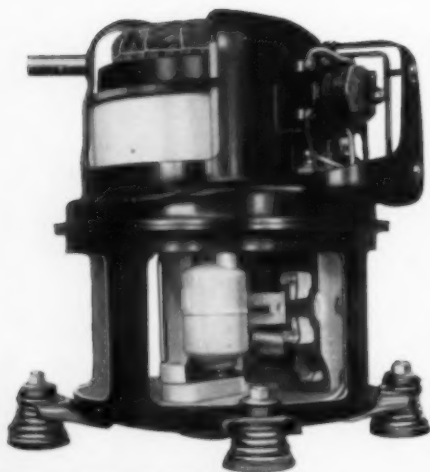


315-W
3 H.P.
Water cooled
Belt-driven



steady performance
means steady profits

with the Copeland line



1 H.P.
Welded

When you sell refrigeration, build your installations around Copeland quality compressors . . . you'll satisfy the customer and safeguard your reputation.

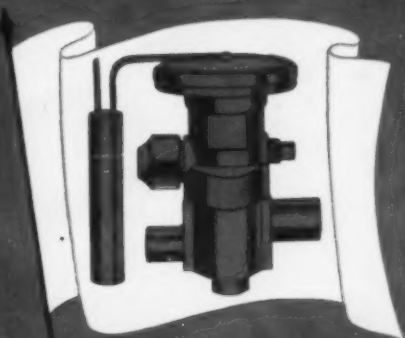
The complete Copeland line gives you a selection of size and type for *every* refrigeration and air conditioning job. Air-cooled, belt-driven models range from 1/4 HP through 3 HP, water-cooled from 1/3 HP through 7 1/2 HP. Copelametic, the accessible hermetic, is available from 1/8 HP through 7 1/2 HP. Copelaweld, welded motor-compressors, are presently available in 1/2 HP through 1 1/2 HP. Specify Copeland and you'll reap these big advantages:

- (1) The industry's top engineering design
- (2) Year-in, year-out dependability that builds repeat business
- (3) Potent national advertising that makes Copeland easier to sell, more profitable for you.

Copeland
DEPENDABLE REFRIGERATION

COPELAND REFRIGERATION CORPORATION
SIDNEY, OHIO

Circle No. 1 on Reader Service Card



alco valves

at the summit of the industry

THE STANDARD BEARER OF QUALITY

ENGINEERED
for service... for life



Designers and Manufacturers of Thermo-
static Expansion Valves; Evaporator
Pressure Regulators; Solenoid Valves;
Float Valves; Float Switches.

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

SEE YOUR ALCO WHOLESALE FOR YOUR VALVE REQUIREMENTS

6688

Circle No. 3 on Reader Service Card



choice
of
hotel
men
from
coast
to
coast



THE BEVERLY HILTON HOTEL—Wilshire & Santa Monica Boulevards, Beverly Hills, Cal. Architect: Welton Becket & Associates (F.A.I.A.)

Smooth functioning behind the scenes is responsible for the high standards of hospitality for which American hotels are noted. And dependable, trouble-free refrigeration is one of the most vital factors contributing to this enviable reputation.

Brunner Refrigeration has long been a favorite in American hostelry, and it continues to rate first choice with hotel men from coast to coast. Here are two of the country's newest and finest hotels, both equipped with Brunner Refrigeration Condensing Units.

At the Beverly Hilton, Beverly Hills, fifty Brunner units will provide dependable refrigeration in seven service areas. Several additional Brunner units are located at other points throughout the hotel.

The Sherry Biltmore in Boston has eighteen Brunner installations . . . nine by Cork Engineering Co., Boston, and nine by Simard, Inc., Lynn, Massachusetts.

When the job calls for utmost dependability and top performance, SELL BRUNNER . . . with complete confidence that Brunner Refrigeration will meet your customer's highest standards.

Ask us for details on the complete Brunner line of open-type and semi-hermetic Refrigeration Condensing Units.

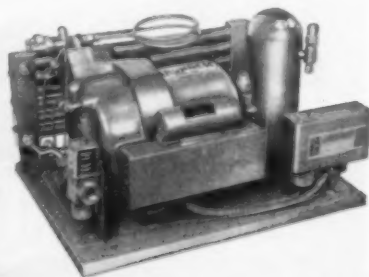
BRUNNER MANUFACTURING CO., Dept. G-955, UTICA, N.Y.

The Brunner Co., Gainesville, Ga.

In Canada: Brunner Corp. (Canada) Limited, Toronto, Ontario



SHERRY BILTMORE HOTEL — 150 Massachusetts Ave., Boston, Mass. Architect: Larkin & Glassman Associates



BRUNNER CONDENSING UNITS

range from 1/4 to 100 H.P. for high, medium, low and extremely low temperature work. They're easy to install . . . easy to service on the job.

COMMERCIAL REFRIGERATION & AIR CONDITIONING

SEPTEMBER 1955 • VOLUME 12 • No. 9

IN
THIS
ISSUE

FEATURE ARTICLES

- 47 **25 YEARS . . .** An editorial by the publisher.
- 48 **HOW 15 HP SAVED 75 . . .** through the application of refrigeration to achieve the exact degree of dehumidification required by a special industrial process.
- 50 **140-TON FOOD MARKET JOB . . .** but no condensing unit bigger than 5 hp was used in rehabilitating this obsolete public market.
- 54 **-90° ROOMS TEST HEATING EQUIPMENT . . .** for efficient operation at Arctic military bases. Here's the story of what equipment was installed and how it is used.
- 55 **NEW PROFIT BUILDER FOR FOOD STORES? . . .** This case history indicates that refrigerated live lobster tanks may prove a profitable specialty item for commercial dealers.

Air Conditioning Section

- 71 **"INVISIBLE" AIR CONDITIONING . . .** builds sales to supermarkets for this ingenious contractor who devises numerous ways to conceal all equipment.
- 72 **NEW AIR CONDITIONING BOOSTS BUSINESS . . .** for an old theater with an installation in which economy, both in original cost and in operation, was a primary consideration.
- 73 **5-HP CONDENSING UNIT—40-TON CAPACITY . . .** that's the ratio made possible by this "ice storage" air conditioning system in a St. Louis church.
- 74 **INSURANCE AGAINST PLANT SHUT-DOWN . . .** is provided by a multiple installation of packaged air conditioners in this windowless factory building in the "deep South."
- 76 **ABSORPTION AND STEAM JET REFRIGERATION . . .** for air conditioning is described and illustrated in this important addition to the contractor's notebook.
- 80 **LUBRICATION OF AIR CONDITIONING MACHINERY . . .** The conclusion of a two-part article outlining the "what—where—why—when—how" of this important subject.

Copyright 1955 by The Industrial Publishing Group, a Division of Telenews Productions, Inc., Cleveland, Ohio.

DEPARTMENTS

It's the Law	10	Useful Literature	85, 96
About People	18	New Products	89, 100
BTU's	45	Applications Manual	110
Commercial Sales News	56	Here's How	117
Contractor News	62	Index to Advertisers	120

This extremely flexible air conditioning duct will save you as much as 32%



- eliminates elbows, clamps and special fittings — saves material
- proved flameproof and water-proof by rigid tests — for long life
- saves up to 3/5 installation time — which saves your money
- broad temperature range — 0° to 250° F. — for broad use

Thermaflex will cut your installation costs substantially when you use this rugged, light-weight duct to connect main line ducts with diffusers, sound boxes and other types of distributors in any air-conditioning system — high or low pressure.

Because *Thermaflex* is so flexible, it easily compensates for misalignment between main line and outlets. It's easy to work with in tight quarters, too — snakes around obstructions and provides a direct, air-tight connection without costly elbows and complicated rigid ducting.



Thermaflex is a snap to install — you can cut it with a knife and side cutters. Brush it with adhesive and slide it over the metal connecting outlet. This is all that's required for a positive, air-tight joint.

Available in 12-foot lengths, 2" to 12" diameter. Write today for Bulletin 12C1. It shows you how to do a better installation job and cut your costs at the same time.

Visit us at the Exposition of Air Conditioning and Refrigeration Industry — Atlantic City, November 28 — December 1. Booth No. 216.

Flexible Tubing

CORPORATION
GUILFORD, CONNECTICUT
LOS ANGELES 64, CALIFORNIA

Circle No. 5 on Reader Service Card

COMMERCIAL REFRIGERATION & AIR CONDITIONING was established in 1944 as *The Refrigeration Industry*. An independent publication, this magazine has no official affiliation with any industry society or association. It is published monthly by:

INDUSTRIAL PUBLISHING GROUP
(A Division of Telenews Productions, Inc.)
1240 Ontario St. Cleveland 13, Ohio

IRVING B. HEXTER President
LESTER P. AURBACH .. Exec. Vice President
EDWIN M. JOSEPH Vice President

EDITORIAL STAFF

THEODORE T. QUINN .. Managing Editor
JIM McCALLUM Editor
RICHARD R. TRYON Associate Editor
WILLIAM G. WOLFE Assistant Editor
ALARIC MAUSSER Art Director

BUSINESS STAFF

ALAN J. KICHLER General Manager
F. P. MIGNIN Circulation Director
HAROLD F. BEHM Franchise Manager

SALES OFFICES

CLEVELAND 13 Superior 1-9622
ROBERT G. JOSEPH
NEW YORK 17 Murray Hill 7-3420
LEE HAAS, Manager
JOSEPH DEMATTHEW
60 E. 42nd St.—Room 803
CHICAGO 11 Whitehall 3-1655
CHARLES F. GEYER
520 N. Michigan Ave.—Room 1613
LOS ANGELES 5 Dunkirk 9-9364
ALAN T. CAZIER, Manager
3460 Wilshire Blvd.—Room 1003
LONDON, S.W. 1, ENGLAND .. Victoria 2609
JOHN A. LANKESTER, Manager
31 Palace St., Westminster
TOKYO, JAPAN
F. C. Taylor
American Trading Co. (Japan) Ltd.
No. 1 Shiba Park 7-Gochi
Minato-Ku, Tokyo

EPA

Accepted as Controlled Circulation Publication at St. Joseph, Michigan. Please return 3579 forms to 1240 Ontario St., Cleveland 13, Ohio.

Subscription rates: United States and possessions—\$5.00 per year, \$8.00 for 2 years; Canada—\$6.00 per year; Foreign—\$7.00 per year, except the United Kingdom, United Kingdom subscriptions £ 2.5 per year, payable in Sterling to our London Office. Single copy price, 50 cents. All subscriptions subject to individual acceptance by the publisher.

INDUSTRIAL PUBLISHING GROUP also publishes *Applied Hydraulics*, *Flow, Industry & Welding*, *Material Handling Illustrated*, *Occupational Hazards*, *Precision Metal Molding*, and *Welding Illustrated*.

Uses less floor space



Helps sell



Low operating cost



and it pays for itself as
you pay for it monthly!



Selling takes time—

Time makes selling easy!



To CLINCH more sales in less time, quote a *monthly payment*, not a *total cash price*. Many of your prospects need their working capital and usual lines of credit for current operations. No matter how much they need your equipment, they probably won't sign your order *now* unless you show them a convenient, practical way to pay. That's the COMMERCIAL CREDIT PLAN way. When can we tell you our story? Phone our office in your city or write: COMMERCIAL CREDIT CORP., 14 Light Street, Baltimore 2, Md.



**COMMERCIAL
CREDIT
CORPORATION**

A service offered through subsidiaries of
Commercial Credit Company, Baltimore...
Capital and Surplus over \$180,000,000
...offices in principal cities of the United
States and Canada.

LESS THAN 2 TEASPOONS



genetron 141—GREEN LABEL MONOCHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0010
Chlorides	none
High boiling impurities—vol. %, max.....	0.05
Non-condensable gases (gases insoluble in perchloro- ethylene)—vol. % in vapor phase, max.....	1.5
Boiling pt. at 760 mm. Hg. °F max.....	-21.4
Boiling range °F (to 85% pt.), max.....	0.9

genetron 12—WHITE LABEL DICHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0010
Chlorides	none
High boiling impurities—vol. %, max.....	0.05
Non-condensable gases (gases insoluble in perchloro- ethylene)—vol. % in vapor phase, max.....	1.5
Boiling pt. at 760 mm. Hg. °F.....	-41.4
Boiling range °F (to 85% pt.), max.....	0.9

genetron 11—ORANGE LABEL TRICHLOROMONOFUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0015
Chlorides	none
High boiling impurities—vol. %, max.....	0.05
Boiling point at 760 mm. Hg. °F.....	74.7
Boiling range °F (to 85% pt.), max.....	0.5

Circle No. 7 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

OF WATER IN ONE TON!

genetron[®]

Super-Dry Refrigerants

Two teaspoons of water aren't enough to cool your breakfast coffee or wet your whistle on a hot day . . . yet, that's the maximum amount of moisture ever found in a 2,000-lb. cylinder of "Genetron" Super-Dry Refrigerants. And, the amount in a single 145-lb. cylinder wouldn't even fog a man's glasses!

Actually, it takes the most delicate and accurate scientific apparatus to measure moisture in "Genetrons," for the content is so infinitely small that it must be expressed in parts per million.

For example, "Genetron" 12—White Label—and "Genetron" 141—Green Label—are so dry they contain less than 10 parts of water per million parts of refrigerant. That's moisture equal to only one/thousandth of one per cent (0.001%).

And, the overall purity of "Genetron" Super-Dry Refrigerants is equally good,

for they are manufactured to meet quality standards which are in many respects more rigid than those for the purest research chemicals.

Look at the stringent manufacturing specifications listed here. See how low "Genetrons" also are in non-condensable gases and low boiling impurities. And, remember that the quality of current production consistently surpasses even these specifications.

It's easy to see why so many leading manufacturers have now chosen "Genetron" Super-Dry Refrigerants as the original charge for their equipment. Their tests have proved "Genetrons" meet every requirement for reliable refrigerants.

So—be sure—always use "Genetron" Super-Dry Refrigerants—made by General Chemical, America's foremost producer of high purity laboratory and scientific chemicals.



Basic Chemicals
for American Industry

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Greenville (Miss.) • Houston • Jacksonville • Kalamazoo • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence • San Francisco • Seattle • St. Louis • Yakima (Wash.) • In Wisconsin: General Chemical Company, Inc., Milwaukee

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

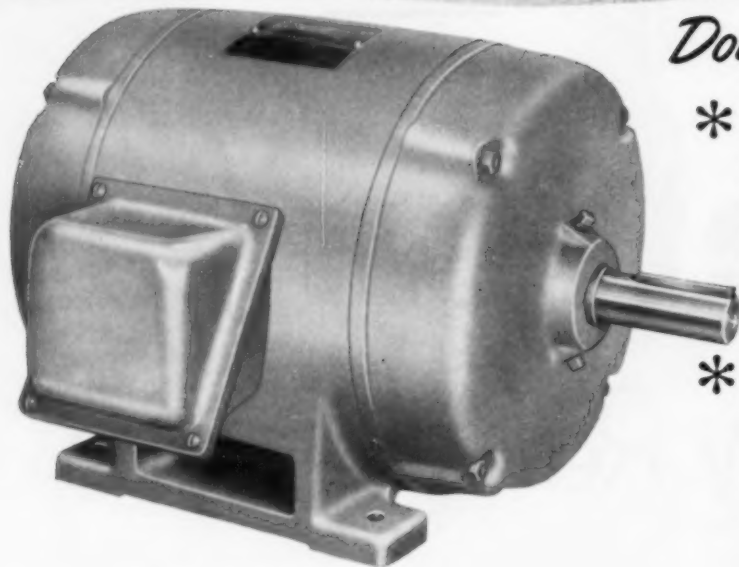
Circle No. 7 on Reader Service Card

Wagner
ELECTRIC MOTORS
... the choice of leaders
in industry

NEW!

Wagner Type DP Motors

Doubly Protected



* Wagner Type DP Motors are protected by rugged, corrosion-resistant cast iron frames, smoothly rounded so that no moisture can collect on them. Motor feet are cast as an integral part of the frame for maximum strength and rigidity.

* Enclosures are drip-proof plus! Air intakes are located at the bottom of the endplates — air outlets are located at the base of the frame, one on each side. Specially designed baffles provide protection for the stator windings.

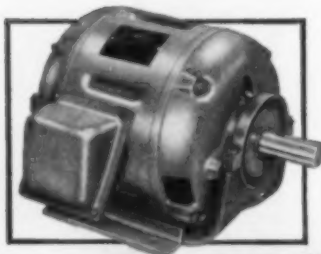
The Wagner line of polyphase, drip-proof general purpose motors—rated to the new NEMA Standards—pack more power into smaller frames, but give you the same high Wagner Quality and long life performance that have made Wagner Motors “the choice of leaders in industry” for many, many years. These new Wagner Motors are fully protected in the ball bearing models. Their construction makes them completely drip-proof — and virtually splash-proof. The extra large, diagonally split conduit box makes wiring easy. Smaller size

and lighter weight means more economical handling and installation.

These new rerated Wagner Motors retain the features desired by plant engineers and maintenance men. They will operate for years without regreasing. But... when lubrication is necessary or desirable, you *can* lubricate these motors because they are provided with two lubrication openings.

Bulletin MU-202 gives full information—write for your copy today.

AVAILABLE WITH RESILIENT MOUNTING —SLEEVE BEARINGS UP THROUGH 5 HP.



These Wagner standard motors, in ratings up through 5 horsepower, can be used for specialized applications because they are available in sleeve bearing models with endplates that will take resilient mounts.

You can look to Wagner for a complete line of standard motors for specialized applications. The wide range of types and sizes permit the selection of a standard motor for almost any need.



Wagner Electric Corporation

6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

PLS-6

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

Circle No. 8 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

G. A. I. RUBATEX Insulation Hardboard

makes more cents*

**in greater pay loads
for Alterman
Transport Lines**



Alterman Transport Lines, Inc., Miami, Florida, is one of the largest carriers of perishable commodities operating in the Southeast. This company hauls frozen foods and frozen citrus products from Florida to 35 states and returns with meats, frozen foods, dairy products, etc., from the Midwest and Northeast. They insulate their equipment with Rubatex Insulation Hardboard because it stands the test of year-round operation in a warm climate and assures them of long lasting duty.

Write us about your low temperature insulation application. Let us show you how Rubatex Insulation Hardboard can make more cents for you — more cents in performance — more cents in production and power savings.

- "K" Factor 0.21
- Zero Moisture Pick-Up
- No Vapor Barrier Needed
- Light Weight—4.5 p. c. l.
- Average Compressive Strength—60 p. s. i.

As Sidney Alterman, President of the Lines, puts it — "There is no question in our mind that Rubatex R-103-S Insulation Hardboard is the best material that can be used to meet the needs of refrigerated equipment. It has passed our test for strength, heat, salt water, and its light weight certainly makes it a perfect material to keep the equipment light as possible, giving us greater pay loads."



GREAT AMERICAN INDUSTRIES, Inc.
RUBATEX DIVISION

Dept. 8 — Bedford, Virginia



**FOR STRUCTURALLY
SOUND
LOW TEMPERATURE
INSULATION**

United's patented BB (block baked) Corkboard installs easier and stays on the job! High strength in relation to light weight permits a sturdy, self supporting structure that is simple to erect. United's corkboard is flexible; the big straight-edged slabs fit accurately and work as easily as lumber. Most important, there is adequate flexibility to conform to minor wall irregularities and absorb stresses. *You get a tight fit that stays tight . . . that prevents creation of moisture-carrying channels which can eventually destroy the insulation value of your installation.*

Yes, United BB Corkboard gives you truly time-tested insulation with a unique combination of benefits ideal for low temperature service.

- ▶ All cork construction without added fillers or binders.
- ▶ Extremely efficient heat insulator that retains initial low K factor when properly installed.
- ▶ No capillary attraction for moisture, hence doesn't rot, swell, warp or support bacterial growth.
- ▶ Fire retardant; insect, vermin resistant.
- ▶ Bonds tightly with cement, paint, hot or cold asphalt.

COMPLETE INSTALLATION SERVICE TOO!

Your nearby United Cork Companies branch office provides a *complete* corkboard service . . . *from product to final installation* . . . to meet your individual needs. Trained engineers are available for consultation . . . or will design every detail of your job. If you desire, our skilled work crews, supervised by the same engineers, will erect your installation. Almost half a century of service to the refrigeration industry assures the satisfactory performance of your BB Corkboard installation . . . today and for years to come.

For Complete Information . . . WRITE



SEE
OUR CATALOG IN SWEET'S

UNITED CORK COMPANIES

4 CENTRAL AVE., KEARNY, NEW JERSEY

**Manufacturers and erectors
of cork insulation for almost a half century**

Engineering and installation offices, or approved distributors, in key cities — coast to coast.

Circle No. 10 on Reader Service Card



by Albert Woodruff Gray

Legal problems are an inherent part of operating any business enterprise. If you are beset by them, you'd better talk to your lawyer. This column, which will appear periodically in the issues of **COMMERCIAL REFRIGERATION AND AIR CONDITIONING**, in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

—The Editors

"SKIP CLAUSE" PROVISION

IN the assignment of a Mississippi conditional sale contract to a bank was the provision, "Should the purchaser skip out with the merchandise and neither can be located, you will be relieved of your endorsement. Should we be successful in locating the merchandise during the life of the contract you will, of course, repurchase the merchandise from us at the unpaid price. However, if the merchandise cannot be located you are released from all liability."

The purchaser operated a restaurant at Hopewell, Mississippi and had his bank account at Jackson, an adjoining town. These contracts were assigned by the dealer to a bank and when the purchaser failed to pay, suit was brought against the dealer by the bank. In his defense the dealer contended that the purchaser had "skipped out" and that although he had been later located at Jackson, the merchandise had not been located, hence, that he was released under this "skip clause" of any liability to the bank.

In rendering judgment against the dealer the court said, "The plain interpretation to be placed upon this clause is that if the purchaser skips out with the merchandise and the bank is successful in locating the merchandise during the life of the contract, then the dealer must repurchase the merchandise, or if the purchaser skips out and the merchandise cannot be located, then the dealer is released from liability."

"Considering the clause as a whole it is clear that it has no application where the purchaser has not skipped out, even though as in this case, he refuses to tell where the merchandise is and the merchandise cannot be located."

Douglas v. Refrigeration Discount Corp., 55 So. 2d 491 Miss.

PLANT BECOMES REAL ESTATE

A refrigerating plant was installed in a room constructed for that purpose, motors and equipment fastened to the concrete floor and connected to the water supply of the building, the wires of the electric system run through conduits connected to a control board attached to the building by bolts and the three refrigerating boxes bolted to the wall.

A mortgage on the building was foreclosed and the land, building and its contents sold. The seller of the plant demanded its return. The court in awarding a judgment to the purchaser of the building held that the plant had been installed by so affixing it to the real property that it had become a part of the building and hence, the property of the building owner.

Etienne v. Millbrae Golf and Country Club, 81 Pac. 2d 245, California.

BUYER'S LIABILITY FOR ATTORNEY FEES

SUIT was brought in Georgia to recover possession of a self service freezer sold under a conditional sale agreement for \$1,200. The purchaser asserted in his defense that after the execution of this agreement the sellers had brought a foreclosure suit of a lien on other property of the purchaser and realized sufficient to pay all the purchaser's indebtedness including the amount due on this freezer, except a charge of \$250 for attorney fees.

In that state a statute governing the collection of attorney's fees provides, "Obligations to pay attorney's fees upon any note or other evidence of indebtedness are void and no court shall enforce such agreements to pay attorney fees unless the debtor shall fail to pay such debt on or before the return day of the suit which is brought for the collection of the same, provided the holder of the obligation sued upon, his agent or attorney, notifies the defendant in writing 10 days before the suit is brought of his intention to bring suit."

No notice had been given in this instance as required by the statute. In its decision holding that the sellers under this contract had no right to the repossession of this self service freezer in satisfaction of these attorney fees, the court said to this statu-

WATSCO TERMINAL SEAL FAMILY FOR SEALED UNITS



Part No. T-100
Wt. 5 1/4 Oz. Per Set



Part No. T-200
Wt. 3 3/4 Oz. Per Set



Part No. T-300
Wt. 4 Oz. Per Set



Part No. T-400
Wt. 3 3/4 Oz. Per Set

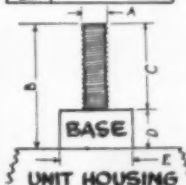


Part No. T-500
Wt. 4 Oz. Per Set

Terminal leaks are stopped instantly and permanently with WATSCO Terminal Seals. The leak is sealed from the outside of the dome — in just 3 minutes. Simply screw the terminal seal over the terminal post and the job is completed. No special tools are required. May be installed right on the job if desired.

PACKED: 3 Terminal Seals to a set. Included are all necessary washers, gaskets, etc. Complete instructions.

SIZE	A	B	C	D	E



UNIT HOUSING
NOTE: For units not listed, special seals will be made at no additional charge. Send us the measurements or fill in the diagram.

Order these by part numbers

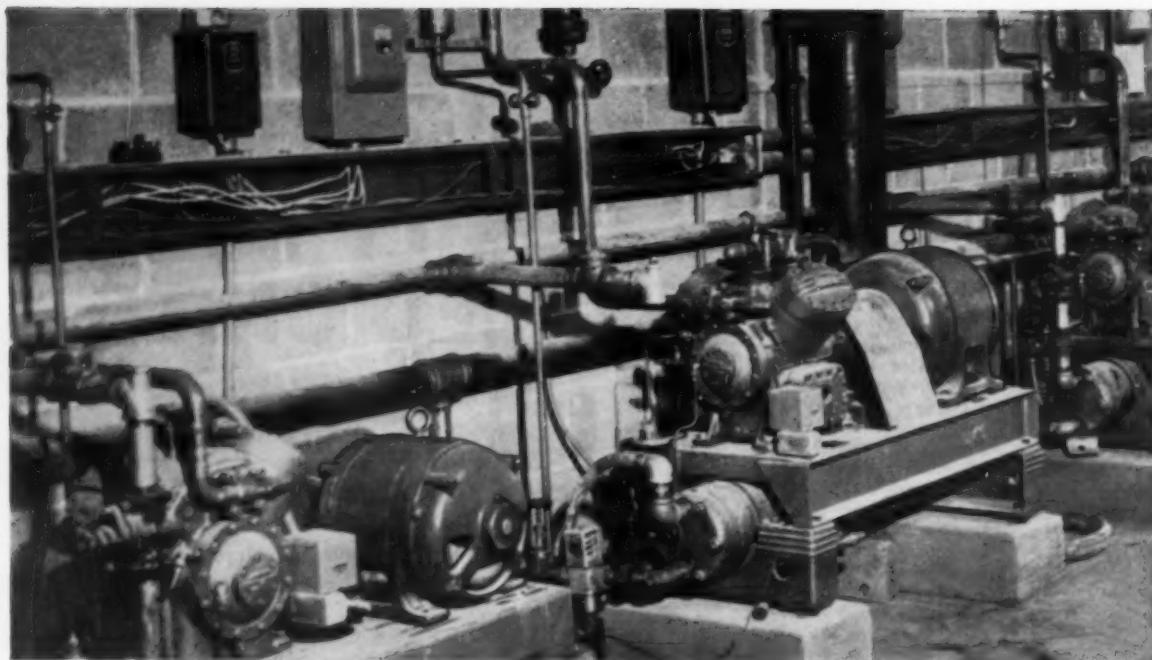
MAKE OF UNIT	PART NUMBER				
	T100	T200	T300	T400	T500
ADMIRAL			★		
COLDSPOT			★		
COPELAMETIC			★		
CROSLEY - F12 UNITS TO 1941	★				
CROSLEY - 1942 & LATER				★	
FRIGIDAIRE - TO & INCL. 1937		★			
FRIGIDAIRE - 1938				★	
FRIGIDAIRE - 1939 - LATER					★
GALE			★		
GENERAL ELECTRIC			★		
GIBSON			★		
KELVINATOR			★		
NORGE			★		
PHILCO			★		
SERVEL UNIT					★
STEWART WARNER			★		
SCHAEFER CABINETS			★		
TECUMSEH			★		
WESTINGHOUSE			★		

SEND FOR WATSCO'S NEW 1955 CATALOG!



WAGNER TOOL & SUPPLY CORP. REFRIGERATION PARTS & TOOLS
40-08 22nd STREET, LONG ISLAND CITY, 1, N. Y.

Circle No. 11 on Reader Service Card



Let each job select

Century

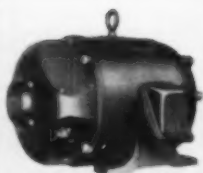
MOTORS ARE Performance-Rated[®]

Why settle for less motor than you need?
Or why pay for more motor than you can
use? The most efficient and economical
motor is one that is fitted to its application
... A Performance-Rated Century Motor.

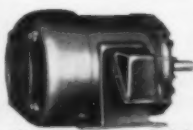
Performance-Rating means simply that from



Squirrel Cage, Polyphase Motors ... 1/4 to 400 H.P. ... available in drip proof and dust proof frames, with sleeve or ball bearings, foot or flange mounting (cushion base available through 5 H.P.).



Repulsion Start, Induction Motors ... single phase ... 1/4 to 7 1/2 H.P. ... provide high starting torque on applications requiring unusually low starting current.



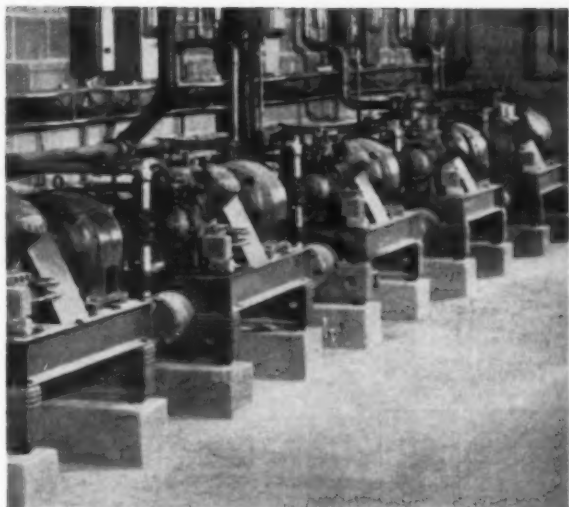
Totally Enclosed Fan Cooled Motors ... 1/4 to 100 H.P. For application in atmospheres containing abnormal quantities of dust, grit, oil or chemical fumes. May be used out of doors.



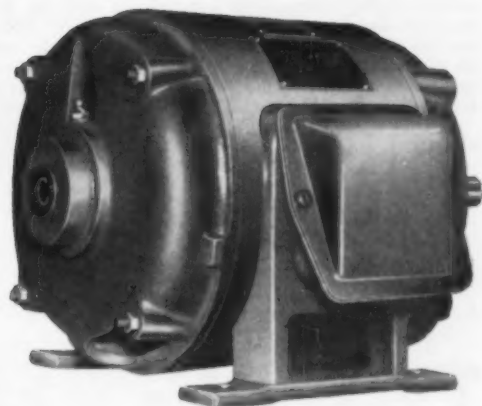
Split Phase, Unit Heater Motors ... 1/20 to 1/2 H.P. ... available with extended-through bolts or cushion base ... split capacitor, DC and polyphase types also available.



Slip Ring Motors ... 1 to 400 H.P. ... a favorite for applications requiring unusually low starting current. Available in drip proof, splash proof and dust proof frames.



for example: This large Midwestern warehouse refrigeration installation is powered by seven Performance-Rated Century Motors, ranging in size from 3 to 10 H.P.



Century Motors for Modern Ideas... AC or DC... Single-phase or Polyphase... drip proof, dust proof or explosion proof frames.

its own motor!

TO FIT YOUR SPECIFIC NEEDS

Century's complete line of motors and generators you'll get precisely the right size, speed, frame enclosure and torque characteristics you need. Century application engineers or Authorized Century Distributors are always available to help you fit a Performance-Rated Motor to your job.

FOR THE FULL FACTS ON CENTURY PERFORMANCE-RATING, MAIL THIS COUPON TODAY

To CENTURY ELECTRIC COMPANY
1806 Pine Street, St. Louis 3, Mo.

Please send me information about

Name Title

Company

Address

City Zone State

Offices and Stock Points in Principal Cities

CENTURY ELECTRIC COMPANY

1806 Pine Street • St. Louis 3, Missouri

15A

IF YOU SERVICE MOTORS, YOU CAN SELL MOTORS...

for compressors, oil burners, blowers, heaters, pumps, fans and scores of other appliances. Century will provide you with a handsome display stand, plus an easy-to-sell assortment of motors that will put you into the profitable replacement motor business. Mail this coupon for information today!

Performance-Rated Motors

1/8 to 400 H. P.



Circle No. 12 on Reader Service Card

tory provision for notice.

"In the statutory foreclosure proceeding of the retention title contract the sellers were not entitled to collect the attorney's fees as there was no compliance with the provisions of the statute as to fixing the obligation for the payment of attorney's fees."

Dupree v. Blankenship, 64 S.E. 2d 457, Ga.

FAILURE TO SELL AFTER REPOSSESSION

WHEN suit was brought in New Jersey against the maker of an installment note for an unpaid bal-

ance of \$1,475 in the purchase of refrigeration equipment the defense was that the note represented the purchase price of this equipment but that the equipment had been sold by the dealer under a conditional sale contract who had already repossessed the unit and had not resold it.

It appeared that the equipment had been removed from the building in which it was located and stored outside, where the seller had later taken it into his possession and still retained it.

Of the right to the repossession of this equipment the court said, "The fact that the seller has other remedies does not limit or defeat his right to

insist upon payment of the price by the buyer. This right could only be limited in the event he actually retook possession of the refrigerator and in that event he would still have a right to resell the refrigerator, purchase it at his own sale and hold the buyer liable for any deficiency including all expenses incurred in the transaction."

This however the court supplemented by reference to an earlier decision of the same character in which the seller had failed to sell the equipment after repossession, that, "The seller has not created a deficiency by the sale of the goods as required by the statute and it was therefore barred from a recovery."

Here the court continued, "I am unable to find any authorities and none have been submitted to me which permit a conditional vendor to take into its possession a chattel sold under a conditional sale contract and retain it under the theory of 'protective custody' and institute suit for the unpaid balance while the chattel is being so retained."

"The right to sue upon the note in this instance or upon the conditional sale contract for the unpaid balance remained absolute in the seller. It was not obliged to repossess or 'protect in its custody' the chattel but once having elected the latter course it was compelled to proceed under the provisions of the statute."

Fogel Refrigerator Co. v. Lamb, 90 Atl. 2d 556, N. J.

EQUIPMENT IN MORTGAGE FORECLOSURE

A refrigerating plant was installed in a New York building under a conditional sale contract. A mortgage had been placed on this building two years before with the clause, following the description of the property.

"Together with all fixtures and articles of personal property now or hereafter attached to or used in connection with the premises, all of which are covered by this mortgage."

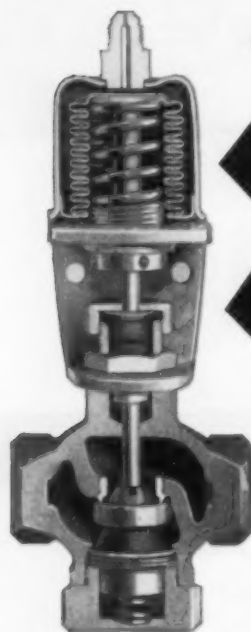
The owner had paid \$2,804.90 of the \$8,145.00 due under this contract when the mortgage was foreclosed. The contractor who had sold the equipment sued to recover possession and in denying him a recovery the court said.

"This equipment came under the lien of the first mortgage and therefore the purchaser at the foreclosure acquired title to it through the foreclosure of the mortgage. The personal property clause in that mortgage covered after acquired fixtures, such as this equipment."

Kinman v. Nyrealty Co., 9 N.Y.S.2d 948, New York.

TWO BIG REASONS

for insisting on
Marsh-Electrimatic Regulators



TWO-PLY BELLOWS

NEOPRENE BOOT

Two-ply bellows has more
than twice the life of single-ply

Break-down tests prove that the Marsh-Electrimatic two-ply bellows has 2½ times the life of an equivalent one-ply bellows. This is because a single ply bellows must be made of heavier gauge metal . . . and naturally the heavier metal rapidly breaks down under the fatigue of flexing.

Boot eliminates packing — friction

At one time the best way to eliminate packing was with a metal bellows, but this Neoprene boot has all the advantages of a bellows plus ten times its life. We have repeatedly proved this, too . . . by cycling the boot, without failure, under actual operating conditions ten

times as long as we could cycle the best metal bellows.

These are just two of the many features that make the Marsh-Electrimatic last longer and function better. They are typical of plus values found in the entire Marsh-Electrimatic line. Write us or see your wholesaler.

MARSH INSTRUMENT CO., Sales Affiliate of Jas. P. Marsh Corp., Dept. P, SKOKIE, ILL.
Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103rd St., Edmonton, Alberta

MARSH Refrigeration Instruments

GAUGES • WATER REGULATING VALVES • SOLENOID VALVES • HEATING SPECIALTIES

Circle No. 13 on Reader Service Card

BUY FROM YOUR
REFRIGERATION WHOLESALER

Here is *why* the SPORLAN *Catch-All*
is the
PERFECT
FILTER-DRIER!



the famous Catch-All Molded Porous Core *catches-all* the moisture, corrosive acids, sludge and foreign matter that can possibly harm a refrigeration or air conditioning system.

Being molded of minute particles of a highly efficient desiccant, then double activated and moisture proof sealed after assembly, the Catch-All core dries the refrigerant down to an end point so low that any remaining moisture is absolutely harmless. Harmful corrosive acids are also adsorbed and retained. It cannot powder or pack, and the refrigerant cannot by-pass or

channel around it. Even foreign matter as minute as nine microns is filtered out with negligible pressure drop.

That's why engineers everywhere say...if you want perfectly clean, perfectly dry, acid free refrigeration and air conditioning systems, buy Sporlan Catch-Alls, the perfect Filter-Drier!



Ask your wholesaler for the Sporlan Bulletin 40-10 today! You'll find Catch-Alls available in progressive sizes from 3 to 192 cubic inches in flare or sweat connections.

SPORLAN VALVE COMPANY

7525 SUSSEX AVENUE

ST. LOUIS 17, MISSOURI

EXPORT DEPARTMENT, 89 BROAD STREET

NEW YORK 4, NEW YORK

Circle No. 14 on Reader Service Card



Only STYROFOAM

offers you so many advantages
in low-temperature insulation

HERE'S HOW
STYROFOAM®
COMPARES TO
OTHER
INSULATIONS



low "K" factor



superior
water resistance



excellent
compressive strength

	low "K" factor	superior water resistance	excellent compressive strength
STYROFOAM	✓ Permanently Low. Avg. 0.25	✓ Remains Dry and As- sures Constant "K" Factor	✓ Highest Strength- Weight Ratio of Any Insulation
INSULATION A		✓	✓
INSULATION B	✓		
INSULATION C	✓		✓

Hoffmann-LaRoche chooses STYROFOAM® for its workability and economy

Styrofoam's non-irritability and easy workability made installation quick and economical in a building recently constructed by this large pharmaceutical house. Several thousand feet of Styrofoam (Dow expanded polystyrene) were used for pipe covering, duct insulation, and insulation for constant-temperature rooms. Another important reason for Hoffmann-LaRoche's choice of Styrofoam is its permanently low "K" factor.



THESE ARE JUST A FEW LEADING COMPANIES THAT HAVE CHOSEN STYROFOAM

The Best Foods, Inc.; The Goebel Brewing Co.; Southern Dairies, Inc.; General American Transportation Corporation; General Electric Company; Norge, Division of Borg-Warner Corporation; Kelvinator Division of American Motors Corporation; New York Central System; Swift and Company; Oscar Mayer and Company.

Dow will send you further information on Styrofoam, free, upon request. Please specify if you want general information on Styrofoam or detailed information on its use in low-temperature work, as a perimeter insulation, or pipe covering. Write Dow Plastics Sales Dept. PL 576C-1, THE DOW CHEMICAL COMPANY, Midland, Michigan, or contact your Styrofoam distributor: The Putnam Organization, Inc.,



Chicago, Ill. • Seward-Kauffman Corp., Elkhart, Ind. • Styro Products, Inc., Kansas City, Kansas • Atlantic Foam Products Co., Ipswich, Mass. • Par-Foam, Inc., Detroit, Michigan • Edwards Sales Corp., Minneapolis, Minn. • Floral Foam Products, Midland, Michigan • Styro Sales Co., New York City • William Summerhays Sons Corp., Inc., Rochester, N. Y. • G. & W. H. Corson, Inc., Plymouth Meeting, Penn. • The Emerson Co., Houston, Texas • Utah Lumber Co., Salt Lake City, Utah • S & S Sales Corp., Milwaukee, Wis.



light weight	ease of handling	superior resistance to vermin and decay	low installation cost
✓ Lightest Of All Rigid Insulations. Avg. Density, 1.7 lbs. per cu. ft.	✓ Pleasant—Fabricates Easily with Common Tools. Doesn't Crumble	✓ Has No Food Value	✓ Lowest Cost, Too, Per Year of Service
		✓	✓
✓			✓
			✓



you can depend on DOW PLASTICS



Circle No. 15 on Reader Service Card

ABOUT PEOPLE

Loren Fletcher, general manager of the Allied Products Div. of



Carrier Corp., has been named a vice president. Fletcher, who has been with Carrier for 11 years, will continue to manage engineering, production and sales. Prior to his association with Carrier, he was chief engineer of Sunbeam Electric Mfg. Co. for five years, following eight years as a design and development engineer with General Electric Co.

Four persons have been named in recent headquarters changes at Worthington Corp. **Robert M. Watson**, formerly director of research, is leaving to accept appointment as associate dean of L. C. Smith College of Engineering, and



H. Walter



W. J. Millett

as chairman of the department of mechanical engineering of Syracuse University. He had been prominent in promoting the company's effort in nuclear power and held major engineering responsibility in connection with the firm's entry into the centrifugal compressor field. **Hellmuth Walter** was named the new director of research. He was at one time top specialist

of the German navy and air force in development of hydrogen peroxide as a propellant for submarines, torpedoes, and rockets, and later was employed by the British Admiralty. He joined Worthington in 1950. **Robert S. Sherwood** was appointed the company's assistant director of research. He came to Worthington in 1951 as a consulting engineer after several years with National Supply Co. in field research and testing. **William J. Millett** was appointed assistant vice president in charge of manufacturing for the company's air conditioning and refrigeration division. He had been with it for 42 years, and was formerly works manager at the Holyoke plant, and assistant to the vice president in charge of manufacturing at Harrison, N.J.

Frank L. Vaughn has been appointed to the field sales organization of



Sporlan Valve Co. Vaughn, who was formerly with another air conditioning and refrigeration manufacturer, will open Sporlan's new Birmingham branch from which he will cover Alabama, Mississippi, and parts of Louisiana, Florida and Tennessee. This territory was formerly serviced from Sporlan's Atlanta office.

Dean C. Seitz, manager of sales of the commercial division of York Corp., has resigned his position effective Sept. 1 to enter the distributing business in Texas. Seitz joined York Corp. 17 years ago to help establish its line of commercial products and to build its distributor-dealer organizations for refrigeration and packaged air conditioning units. He held the position of manager of distributor sales until last fall, when he was promoted to the post from which he is now resigning. No successor has as yet been appointed.

Earle L. Kneifel has been appointed sales representative for



Marsh Instrument Co. in the Pittsburgh area. The territory he will serve will be all of Southwestern Pennsylvania extending as far east as Juniata County. Before becoming associated with Marsh Instrument, Kneifel was employed as an engineer with North American Aviation.

Richard H. Hoffman has been named sales correspondent in the Chicago office of the Du Pont Co.'s "Kinetic" Chemicals Div., and **Douglas H. McKenna** has been assigned as sales representative for its "Freon" refrigerants and aerosol propellants in the Milwaukee territory.

John T. Sanders III has been appointed manager of the New Orleans branch

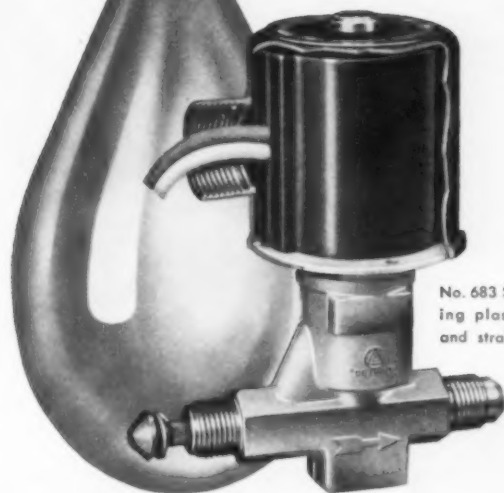


office of Frick Co. Sanders, a registered professional mechanical engineer, has been doing sales work at Frick's main office since last September and for the past eight years was engaged in selling Frick refrigerating and air conditioning equipment in New Orleans.

Samuel N. Seely has been named sales supervisor of the "Kinetic" Chemicals Div. in the Los Angeles district of Du Pont Co.'s Organic Chemicals Dept. Succeeding him as manager of the "Kinetic" Chemicals export sales section in Wilmington is **Leonard Waller**, who for most of the last seven years has been a technical representative of the company in India and Switzerland.

Continued on page 21

Waterproof Solenoid Valves



No. 683 Solenoid Valve showing plastic-imbedded coil and strainer at S.A.E. inlet.

DETROIT Solenoid Valves have built-in protection against moisture, dirt, leakage and noise!

- Coil imbedded in waterproof plastic.
- Strainer integral in forged brass bodies.
- Sturdy mounting boss.
- Noiseless operation . . . no A.C. hum.
- Choice of flare, sweat or pipe thread connections.
- Capacities to 5.1 tons Freon-12.

DETROIT CONTROLS CORP. supplies a complete line of controls for the heating and air conditioning industries, as well as refrigeration.



No. 681
Capacities to
8.7 tons F-12



No. 686
Capacities to
20.4 tons F-12



No. 689
Capacities to
50 tons F-12

DETROIT CONTROLS CORPORATION
8900 TRUMBULL AVE. • DETROIT 8, MICHIGAN
Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation



Representatives in Principal Cities • Canadian Representatives:
RAILWAY AND ENGINEERING SPECIALTIES, LTD.,
Montreal, Toronto, Winnipeg.



AUTOMATIC CONTROLS for REFRIGERATION

AIR CONDITIONING • DOMESTIC HEATING • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES

Serving home and industry

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

Circle No. 16 on Reader Service Card



No need to shop around—Anaconda has everything you need!

Hundreds of distributors stock the complete Anaconda line.

Soft Copper Tubes in Packaged Coils—50-ft. lengths.

Hard Copper Tubes—straight lengths.

Fittings—elbows, tees, couplings, unions, adapters, reduction combinations, flush fittings, fitting end plugs, tube caps, return bends.

Vibration Eliminators.

Quality—Consistent Uniformity—Strict quality control from start to finish gives you uniform working and service characteristics every time.

See Your Anaconda Distributor—He can handle all your requirements.

The American Brass Company, Waterbury 20, Conn.
In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

ANACONDA®
REFRIGERATION PRODUCTS

Circle No. 17 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

Continued from page 18

Sherman Singer has joined Refrigeration Engineering, Inc. as a sales engineer. He has been active in refrigerating and air conditioning sales and sales promotion since 1947, and for the past three and a half years has been in the sales department of Drayer-Hanson, Inc., specializing in air conditioning equipment.



James E. Mason has been appointed assistant advertising manager of Copeland Refrigeration Corp., according to W. G. von Meyer, sales and advertising manager. For the past three years Mason has been with Grant Advertising, where he directed Chrysler Airtemp's public relations and product publicity.



D. G. Wright

P. J. White

of Perfection Industries, Inc. He assumes the duties of J. H. Rasmussen, who has retired as vice president and director of appliance sales. Since 1953, Wright has been general manager of Globe Stamping and Refrigeration Products Div. of Hupp Corp. **Phillip J. White** has been named sales manager of Perfection's Refrigeration Contract Div. For the past three years he has been sales manager of the Refrigeration Products Div. of Hupp Corp.

Kenneth Adams, Jr. and **Warren Ball** have been appointed southeast and west-central regional sales managers, respectively, for the Carver Pump Co. Adams will cover Georgia, Florida, Alabama, Tennessee, North and South Carolina. Ball will cover Iowa, Missouri, Kansas, Nebraska, Minnesota, and North and South Dakota.

Philip S. Morris has resigned as executive vice president and director of McQuay, Inc., and has also resigned as an officer and director of American Automatic Ice Machine Co., a McQuay subsidiary. Morris, who has been with McQuay since January, 1947, has served as executive vice president and a director since early 1948.



Stephen M. Ramsey has been appointed to the newly created post of branch manager of Minneapolis-Honeywell Regulator Co.'s sales and service office in Miami, Fla. Ramsey has been manager of the firm's Columbus, Ohio, branch since 1950. He will be succeeded there by **Robert R. Moore**, a heating controls sales engineer in Columbus since 1951. Ramsey joined Honeywell as a sales engineer in 1946. Moore has been in the company's Detroit sales office and in Honeywell's home office in Minneapolis before being assigned to Columbus.

W. R. Clift and **Ernest E. Gladney** have joined M&V Supply Co., Oklahoma City parts wholesale firm. Clift will be northern Oklahoma representative and Gladney will assist M&V customers with estimating, quotation and engineering problems.

Ray A. Tritten has been appointed assistant to the general manager of the West Coast Divisions of Carrier Corp. In his new post, Tritten will report to William J. Bailey, Carrier vice president who heads the company's four West Coast Divisions—the Day & Night, Payne and Monrovia Aviation Divisions with offices and plants in Monrovia, Calif., and the Spectrol Electronics Division, San Gabriel, Calif. All four divisions were formerly part of Affiliated Gas Equipment, Inc., which was merged with Carrier recently.

C. L. Babin has been appointed head of the newly formed export department of Bush Mfg. Co. The new department will handle all export sales for Bush as well as for the company's wholly-owned subsidiary, Heat-X, Inc. Babin was formerly assistant director of sales at Bush.



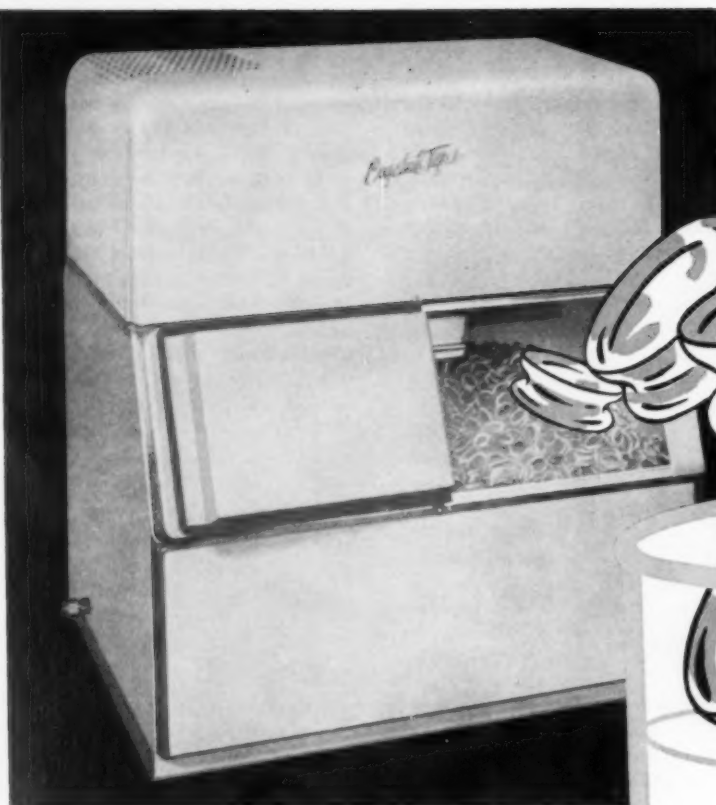
Gerald S. Feild has been appointed Sales Representative for the state of Georgia by Wolverine Tube. Formerly office sales representative in Wolverine's Decatur, Ala. plant, Feild will establish headquarters in Atlanta.

V. C. Warfield has been appointed western division merchandise manager of American Blower Corp. From his Chicago office, Warfield will provide sales and application engineering assistance to jobbers and will also select and establish distributorships.



Continued on page 23

2-IN-1 ICE SERVICE



*Crystal Tips
or Chips*

**AUTOMATIC
ICE MAKER**

**..Saves up to 90¢
out of every dollar
spent for delivered ice!**



PAYS FOR ITSELF... Ends All "Ice Worries!"

You can use your prospects' own records to prove to them that the CRYSTAL TIPS or Chips Automatic Ice Maker will pay for itself in a short time. Many owners get their original investment back in less than a year—after that ice costs them only pennies for water and electricity.

Show them that a CRYSTAL TIPS 2-in-1 Ice Maker provides a constant, full supply of pure, fresh sparkling Tips or Chips—the "cube" size Tips, or by the flip of a switch, the fast cooling Chips. No crusher! No grids! No fuss! No muss! No waiting around for deliveries!

Its versatility, convenience, proved dependability and smart design makes the CRYSTAL TIPS or Chips Ice Maker the leader in the field. Write us for franchise details.

AMERICAN AUTOMATIC ICE MACHINE CO.

1702 FOURTH ST. N.W., FARGO, MINN. A subsidiary of McQuay, Inc. Manufacturers of Heat Transfer Equipment since 1923

Circle No. 18 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

Continued from page 21

Richard E. Sweitzer has been appointed assistant sales manager in charge of residential sales and



R. E. Sweitzer

R. H. Maloy

Robert H. Maloy has been named advertising and sales promotion manager of Trion, Inc. Sweitzer has been advertising and sales promotion manager at Trion for the past five years and Maloy was formerly with Insul-Mastic Corp. of America.

Harold S. Boxer has been appointed advertising and sales promotion manager of the Fedders-Quigan Corp. Boxer comes to Fedders from the Television and Radio Division of Westinghouse Electric Corp. where he has been advertising and sales promotion manager since 1952.

Anthony J. De Fino, formerly vice president and general manager of the Buffalo division of Fedders-Quigan Corp. has been appointed to the newly created post of vice president in charge of all sales.



De Fino joined Fedders in 1945 as a sales engineer, following three years service with the armed forces as a major in research and development. In 1949 he became general manager of Fedders' Buffalo division. In 1953 he was appointed a vice president of the corporation. He is a former president and current member of the board

of directors of the Air Conditioning and Refrigeration Institute.

Peterson Nesbit has been transferred to the Boston sales office of Reliance Electric and Engineering Co. as a sales engineer in the New England district, and **Charles R. Sargeant** has joined the staff of the company's New York office as a sales engineer, succeeding Nesbit in that area.

Ernest Nuber has been promoted to general field sales manager for Bristol Co. Nuber, who joined the Bristol organization in 1929 as a sales engineer, has been manager of the company's application engineering department since 1948 and sales manager since 1954.





THAWZONE

AN INTERNATIONAL PRODUCT

USED FROM

... ALASKA TO AUSTRALIA

... ARGENTINA TO THE ALEUTIANS

Thawzone is used not only in the United States but all over the world, distributed through an organization of over 600 wholesalers. The letter from Venezuela, reproduced here, clearly indicates the enthusiastic reception Thawzone has received from our Latin American neighbors.

Thawzone travels quickly to the expansion valve, the receiver, the coil, etc., to DESTROY moisture. You know definitely that the unit will not freeze up. It is a patented product, in a class by itself. No other drier has all the advantages enumerated here. You can use Thawzone in practically any "Freon" or methyl unit.

Your wholesaler has Thawzone. Phone him now.



SOCIEDAD ARGENTINA VENEZOLANA DE ESTUDIOS Y REPRESENTACIONES

GUINAND

CARACAS VENEZUELA

Jan. 10, 1955

Highside Chemicals Co.,
4 Colfax Avenue,
Clifton, N. J.

Re: Your "Thawzone" product

Gentlemen:

We would like to state that we have been purchasing your "Thawzone" product for quite some time now, and are using it in our own maintenance service, as well as selling it to many refrigeration outfits throughout Venezuela.

The testimonies we have gathered from our own personnel, as well as from many of our customers, indicate clearly the satisfaction "Thawzone" gives in eliminating humidity in refrigeration circuits, and we continuously recommend its use wherever possible.

Very truly yours,

CARLOS FISCHER
Manager

1. Actually destroys moisture ... not a mere anti-freeze.
2. Scavenges oxygen ... the only product that eliminates this corrosion-causing chemical.
3. Cannot cause pressure drop.
4. Cannot clog with oil.
5. Does not release moisture when temperature changes.
6. May be used in open or hermetic units containing "Freon", methyl chloride, methylene chloride, or isobutane.
7. Costs only about 8 cents per lb. of refrigerant treated. Used in small amounts.

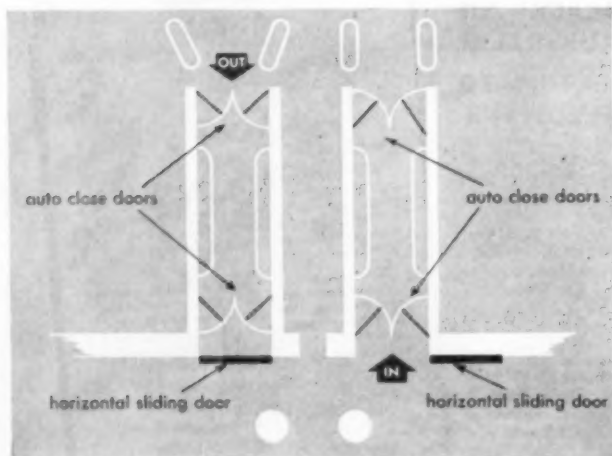
HIGHSIDE CHEMICALS CO., a unit of STEWART INDUSTRIES, INC.,
4 Colfax Ave., Clifton, N. J.



One-way door systems speed handling. Fork lift trucks enter —5°F freezer room at right and leave at left. To prevent interference

with materials handling, a Jamison Super Freezer Door is installed in the center for pedestrian traffic.

Freezer Warehouse Uses Jamison Doors in Novel One-Way Traffic System



Vestibule icing problem solved. Two sets of Auto-Close Doors 24 feet apart form a vestibule that acts as an air lock. Ice and frost formation is prevented on doors and floor by a top-floor warming system and by air conditioning the vestibule.

With one-way traffic and dehumidified air locks, the Merchants Terminal Corporation establishes a new high for handling efficiency and refrigeration economy in its new Land-over, Maryland, warehouse. Thirty-five Jamison Doors play a large part in this operation. For additional information about cold storage doors, consult your architect or write to JAMISON COLD STORAGE DOOR CO., HAGERSTOWN, MD.

Architect: Van Renssler P. Saxe, Baltimore, Md.
Consultant: A. W. Ruff and Luke St. Onge
V. C. Patterson & Associates, York, Penna.

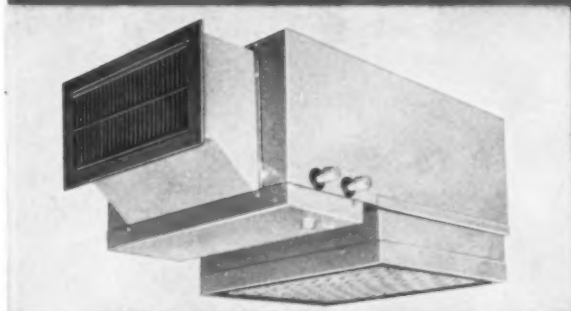


More JAMISON Doors are used by more people than any other Cold Storage Door in the world.

Don't do anything until you investigate this

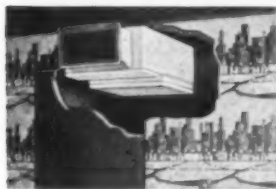
New Air Conditioner

FOR MOTELS, HOTELS, RESIDENCES, OFFICES



Cools • Heats • Dehumidifies • Filters

Available for direct expansion systems or chilled and hot water systems. Ideal for multiple installations. Each unit individually controlled for personalized comfort.



Easy to Install

Fits almost anywhere with minimum effort. No ducts. No sheet metal work. Unit is completely enclosed.



Easy to Service

Anyone can remove or replace the filter or the plug-in motor unit in seconds without tools.

RECOLD Model *RE*

It's Quiet

No Buzzing



No Drumming



No Whistling



Inexpensive, Efficient, Versatile

RECOLD *RE* solves room air conditioning problems quickly, efficiently, inexpensively. Priced far below comparative units. Saves on installation, too. Comes complete, including electrical connection box. Easily installed almost anywhere in new or existing build-

ings. Fits into unused area such as space above closet shelf. Outlet fits between studs. RECOLD *RE* gives you three big advantages: low first cost, low installation cost, low maintenance cost.

Specify RECOLD *RE* Air Conditioners.

Write for illustrated folder

Recold

Refrigeration Engineering, Inc.

7250 East Slauson Avenue
Los Angeles 22, California



REFRIGERATION ENGINEERING, INC.

Dept. J-2

7250 East Slauson Avenue
Los Angeles 22, California

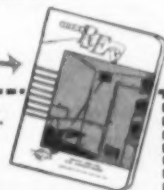
Please send illustrated folder on the Recold *RE* Air Conditioner.

NAME _____

FIRM _____

ADDRESS _____

(or attach to your letterhead)





Permagem makes a perfect seal every time

Manufacturers and service men alike prefer the positive sealing action they get from Permagem. Used to seal inspection plates, pipe and conduit openings, refrigeration and display cases, Permagem eliminates the host of troubles which condensation can bring down on your head—from just plain heat loss to ruined insulation.

These men are using gray-white Permagem, which is odorless, never hardens, and can be painted over immediately after application. Since it won't attack insulation, it is ideal for use around electric wiring, rubber or plastics. Brown Permagem is a heavy-duty sealer which will adhere to any dry surface and remain

pliable from 0° to 350°. Both forms come in 2½ lb. and 55 lb. slugs, while gray-white Permagem is also available in 80 ft. rolls of 3/16" cords and 20 ft. rolls of 3/8" cords.

Your wholesaler has Permagem—or write Refrigeration Division, VIRGINIA SMELTING CO., Dept. 64, West Norfolk, Va.

VIRGINIA *Chemicals*

Available in Canada and many other countries
ESOTO • KINETIC CHEMICAL'S "FREDON" REFRIGERANTS • V-METH-L
CAN-O-GAS • PERMAGUM • PRESSTITE TAPE • SUNISO REFRIGERATION OILS



Won't attack electrical insulation.



Seals pipe openings permanently.



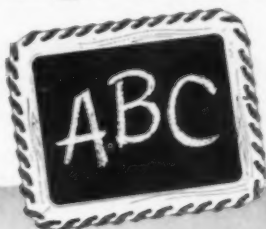
Perfect for refrigerator and display cases.

Circle No. 22 on Reader Service Card

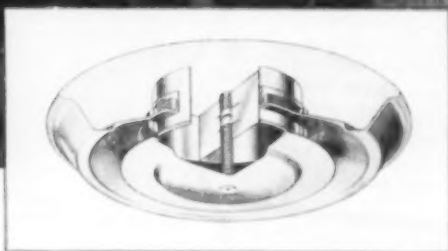
SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

Air Conditioning Made Simple as...

Kno-Draft Type



Air Diffusers



HERE'S an air diffuser that combines high efficiency with real economy. It's ideal for commercial installations where you may run into hung ceilings or low mounting heights.

Kno-Draft Type ABC Air Diffusers feature an exclusive snap-lock assembly that cuts installation time way down. An integrally spun anti-smudge cone assures clean operation. A special neck-mounted rubber gasket on the diffuser eliminates stray air leakage. In addition, a sleeve-type damper enables you to adjust *after installation* for the exact air volume required.

Functionally styled, with a handsome sprayed aluminum lacquer finish, Kno-Draft ABC Diffusers harmonize with any interior. You can get more jobs, make more profit with Kno-Draft. For full details, send today for Bulletin K-34. Connor Engineering Corporation, Danbury, Connecticut.

CONNOR
ENGINEERING
CORPORATION

MAIL COUPON TODAY

kno-draft®
air diffusers

See our catalog in
ARCHITECTURAL
FILE
or write for copy

CONNOR ENGINEERING CORP.
Dept. C-95, Danbury, Connecticut

Please send Bulletin K-34 describing Kno-Draft Type ABC Air Diffusers for commercial installations.

Name

Company

Address

City Zone State

Circle No. 23 on Reader Service Card

Easy to See Why

SERVEL SUPERMETIC

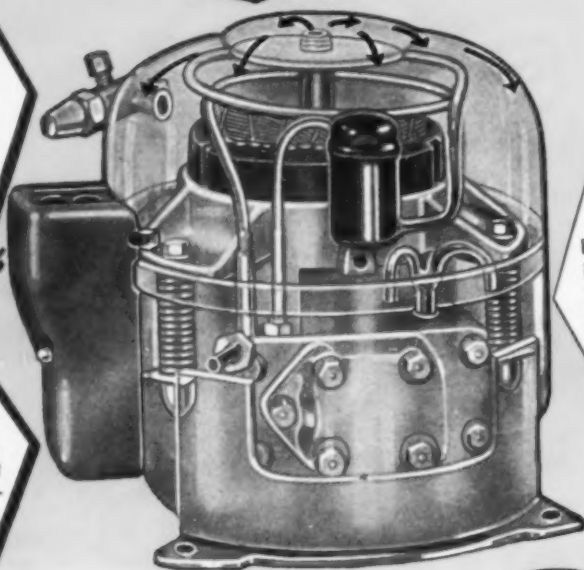
Runs Cooler . . . Quieter . . . More Economically

Geyser-like action of oil spray from top of shaft dissipates compressor heat through power unit dome — soundproofs movement of internal parts.

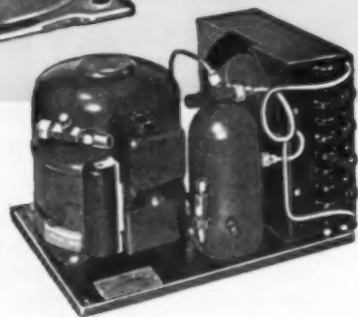
Refrigerant vapor returning from evaporator coil envelops stator windings — reduces motor heat to assure highest efficiency of power elements.

Easily accessible controls have long capacitor leads — only wiring required is to connect supply line to 2 terminal posts.

Internal spring mountings eliminate vibration. Unit can be bolted securely to mounting supports.



Here are Servel features that boost profits when commercial refrigeration and air conditioning fixtures are "powered by Supermetics." Simple to install, exceptionally easy to check — Servel's quiet, dependable operation will please your customers, create more sales. If you are not now using Servel, order a Supermetic for your next applications. All models are factory-warranted.



Servel hermetic condensing units for expansion valve or capillary tube type systems, and hermetic power units are available in all popular sizes from $\frac{1}{4}$ through $7\frac{1}{2}$ H. P. Write today for complete set of Supermetic model specifications.

Servel

SERVEL, INC., Commercial Refrigeration Division, Evansville 20, Indiana

THE NAME TO WATCH FOR GREAT ADVANCES
IN REFRIGERATION AND AIR CONDITIONING



Gives long
service ...



Guards
against heat flow ...



Protects foods
in storage ...

No wonder ROCK CORK is the No. 1 insulation for cold rooms, equipment and piping!

Not just another insulation, but a *many ways better insulation*, Rock Cork has long been the first choice of leading refrigeration engineers.

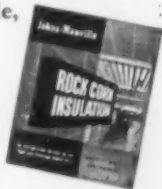
Rock Cork brings you the excellent insulating qualities of mineral wool, plus the added protection of a moisture-resistant asphaltic binder. Because Rock Cork is basically mineral in composition, it is immune to vermin and mold-growths ... an extremely important advantage wherever odor-sensitive foods are stored.

Rock Cork is produced in sheet, lagging and pipe insulation forms in standard sizes and thicknesses. Rock Cork Pipe Insulation has the additional protection of an asphalt-saturated asbestos

felt jacketing which also speeds installation by reducing the need for seam filling.

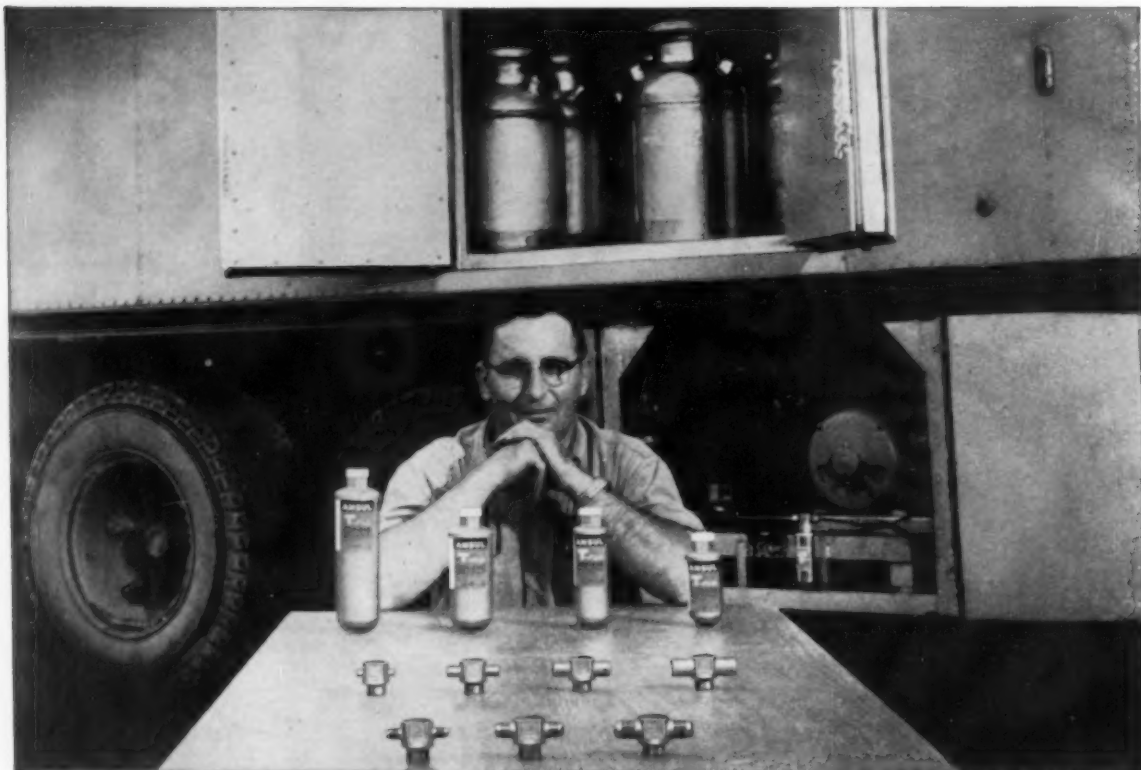
Skilled applicators protect your investment! For maximum efficiency, insulation must be installed correctly. Be sure that you get the most out of your insulation dollar by calling in a Johns-Manville insulation contractor. For the name of the one nearest you, write Johns-Manville, Box 60, New York 16, N. Y.

Important insulation facts FREE
Folder IN-122A contains property tables and other important reference data on Rock Cork's advantages. Send for it today!



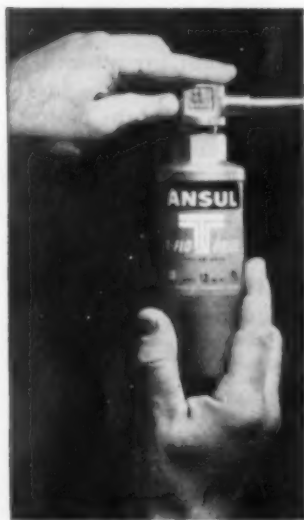
Johns-Manville **ROCK CORK**[®]

REFRIGERATION INSULATION



Shown with the Ansul Drier Line is Lawrence Julian, supervisor of refrigeration maintenance at the Twin Pines Dairy, Michigan's largest independent dairy.

Ansul's unique T-Flo Design can simplify your drier problem, too



You can replace the T-Flo Cartridge without breaking the line.

With forty-five refrigerated dairy trailers on the go and numerous plant refrigeration units to service, Lawrence Julian just doesn't have time to waste on complicated drier installations. Ansul T-Flo Driers and T-Connectors have been a big help in simplifying his drier problems.

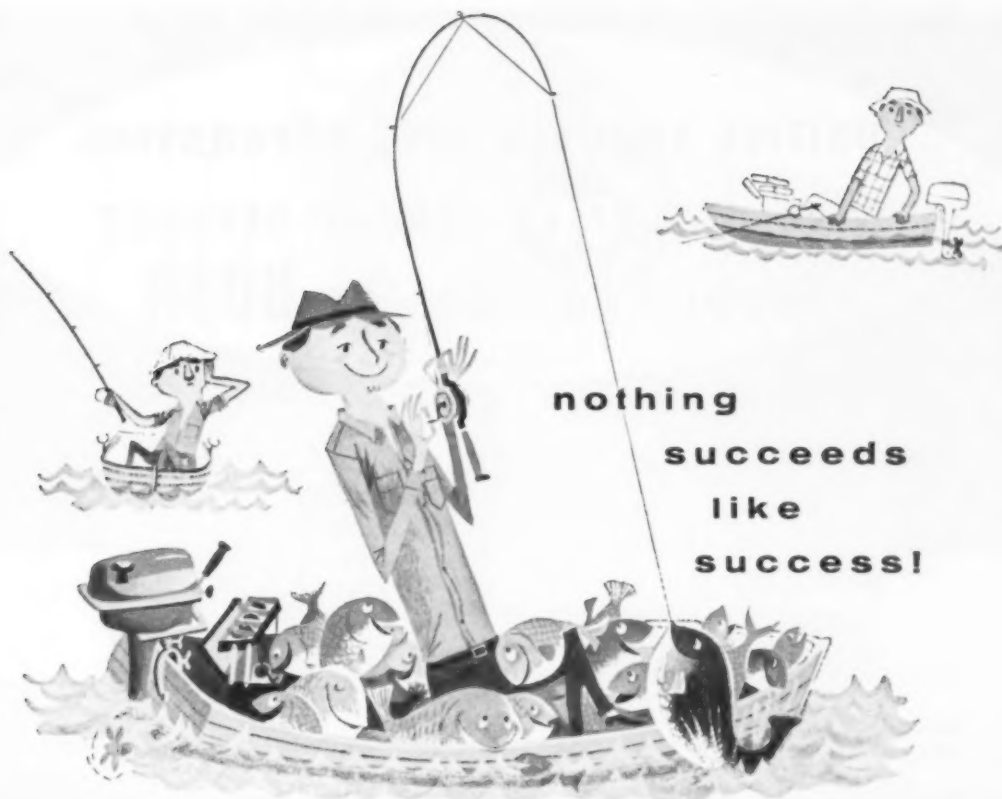
Once *one* of the 7 Ansul T-Connectors is permanently placed in the liquid line, you can install *any one* of the 4 Ansul T-Flo Drier Cartridges (see above). These 11 parts, 7 fittings and 4 driers, give you *28 possible installation combinations*. Here is flexibility that no other drier can match. It will save you valuable time on every job.

At the same time you cut your inventory of driers and drier fittings, too.

Changing an Ansul T-Flo Drier is the easiest thing in the world. Remember, line breaking is not necessary. Just unscrew the old drier, replace with the new. Hand-tightening will give you a leakproof seal. You can install the T-Flo Drier in any position—up, down or sideways.

Be sure to ask your wholesaler about the new Ansul Dry-Eye Connector that tells you by *color* if the refrigerant is wet or dry. It's another Ansul time-saver that you won't want to be without. The ANSUL CHEMICAL COMPANY, Dept. D-23, Marinette, Wisconsin.





nothing
succeeds
like
success!

**Airtemp Dealers
Handle a Complete Line**



Packaged Waterless (Air-Cooled) Air Conditioners—no water needed, no plumbing required. 2, 3, 5 and 7½ H. P.



Packaged Water-Cooled Air Conditioners in 6 models, from 2 to 15 H. P.

AIRTEMP'S leadership assures your success!

More Airtemp "Packaged" units have been sold than any other make!

Airtemp pioneered "Packaged" air conditioning 18 years ago. This leadership and experience is bringing greater sales to dealers today!

You sell more—because you get continuous help from your Airtemp *Distributor*! As a "Packaged" air conditioning specialist, he's familiar with your problems and can help you solve them *fast*!

You sell more—because you represent the *trusted Chrysler name*! Your customers put their confidence in the high engineering standards of Chrysler Corporation.

You sell more—because you're backed by *powerful merchandising*! Strong national advertising combined with local-level promotion brings in more customers.

You sell more—because of *exclusive Airtemp features*! Special exclusive features give your customers more for their money...and make selling Airtemp easier for you!

For full details on all of the advantages of an Airtemp Packaged Cooling Franchise, write to: Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.

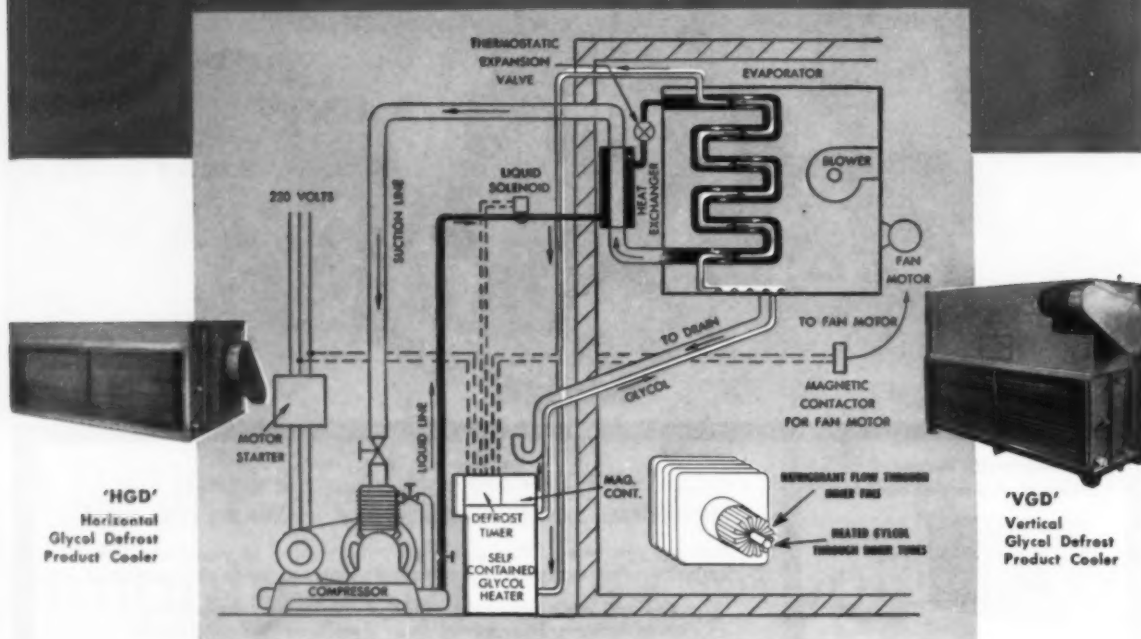
Airtemp
DIVISION OF CHRYSLER



AIR CONDITIONING • HEATING FOR HOMES, BUSINESS AND INDUSTRY

Circle No. 27 on Reader Service Card

POSITIVE TROUBLE-FREE DEFROSTING
WITH NEW **GD GLYCOL DEFROST**
PRODUCT COOLERS BY BUSH



BUSH 'GD' Glycol Defrost product coolers feature famed Inner-Fin coil construction. This design — exclusive with Bush — permits units to defrost from the inside.

Entirely separate defrosting circuit consists of glycol pump, cast aluminum glycol heater, timer and magnetic contactor — supplied as an assembled kit.

Heated glycol is circulated within the inner tube, and Inner-Fin design permits rapid distribution of heat to point where frost forms.

As a result, units defrost quickly . . . room temperature rise is held to a minimum.

Complete containment of glycol eliminates dilution of defrosting medium, abolishes need for replenishing or distilling, reduces danger of defrost failures from freeze-up.

Hot glycol circulation in drain pan also insures proper carry-off of water as unit coils are defrosted.

Available in compact floor-mounted or ceiling-hung models. Write for complete information.

BUSH

BUSH MANUFACTURING COMPANY · West Hartford 10, Connecticut

RIVERSIDE · CALIFORNIA

PHILIP E. CONRAD
Simmons & Conrad
Hartsville, Pa.



**He sold 1
which sold 16 more!**



**Carrier
ICEMAKER sales
keep snowballing!**

Ask any Icemaker salesman!

They all agree—every Carrier Icemaker you sell sells **MORE** Icemakers. Why not start your own snowball rolling now? Become a Carrier Automatic Icemaker dealer—the smartest move you've ever made.

Ask Phil Conrad!

He's the owner of Simmons & Conrad of Hartsville, Pa. This is what he says:

"Two years ago we were handling another make of ice machine, but maintenance calls got us down. So we switched to Carrier. My first sale was to a nearby diner. That one sale sold 16 more. And each of these is selling still others. For my money—and my customers'—the Carrier Automatic Icemaker is the best in the business!"

You make the most with Carrier because Carrier gives you the most to sell!

Savings that can't be beat. Costs for water and electricity are usually less than 1/3 the price of delivered ice.

Models for every need. Flakes, cubes, crushed, or cubes-and-crushed, from machines in a wide range of capacities. 12 sizes or combinations in all!

Automatic operation. Every model starts, stops, even cleans itself automatically.

Find out more—by mail

Mail the coupon. We'll rush information about prospects, financing, promotion, profits. Mail it now—while you're thinking about it.



**air conditioning
refrigeration
industrial heating**

CARRIER CORPORATION, 321 S. Geddes St., Syracuse, N. Y.

I want to start riding that snowball. Tell me more.

Name

Business

Address

City Zone State

**"It
takes all
6
for perfect
Wholesaler-
Dealer-User
Satisfaction"**

Says The LEHIGH TEAM



Export Dept.
13 E. 40th St.
New York 16, N. Y.

**The fastest growing
independent line is Lehigh
BLU-COLD. The reasons for this
are sound as the line itself.**



1. A COMPLETE LINE The Lehigh wholesaler can meet every demand of the dealer. The user has the widest choice of units or complete systems.

2. RELIABLE RATINGS Lehigh BLU-COLD rates capacities 100% by ASRE standards — without the use of a heat exchanger. This is a guarantee that the rated capacity will be delivered on the job without sub-cooling or other "stimulant"



3. HONESTLY HEAVY-DUTY Lehigh units from 1/3 H.P. thru 5 H.P., cataloged as HEAVY-DUTY, are really heavy-duty. Not just by name, but by construction. This includes such heavy-duty features as: REMOVABLE CYLINDER BLOCKS, COMPRESSION AND OIL RINGS, FULL LENGTH CONDENSERS, LARGE PUMP-DOWN CAPACITY RECEIVERS, ADJUSTABLE MOTOR RAILS, SPECIALLY DESIGNED MALLEABLE IRON BASES, etc. (Write for Bulletin H.D.)

4. INTERCHANGEABLE PARTS Lehigh units have the greatest parts interchangeability. Two sets of parts cover all units from 1/3 thru 5 H.P. Reduces inventory — simplifies service — reduces investment.



5. BASIC MATERIALS CONTROL The big, modern all-electric Lehigh foundry produces the finest close grained grey iron castings for BLU-COLD compressors. Lehigh makes more of the components that go into a unit than the majority of refrigeration manufacturers. We pass this advantage to you in many ways.

6. AGGRESSIVE, CAPABLE MANAGEMENT

Lehigh is a stable company, young in spirit, aggressive in management — and with an understanding of down-to-earth engineering and selling problems. A company that is small enough to take a personal interest in every customer and large enough to carry out full scale development and engineering programs.



**If you sell or use refrigeration —
it will pay you to know Lehigh better!**

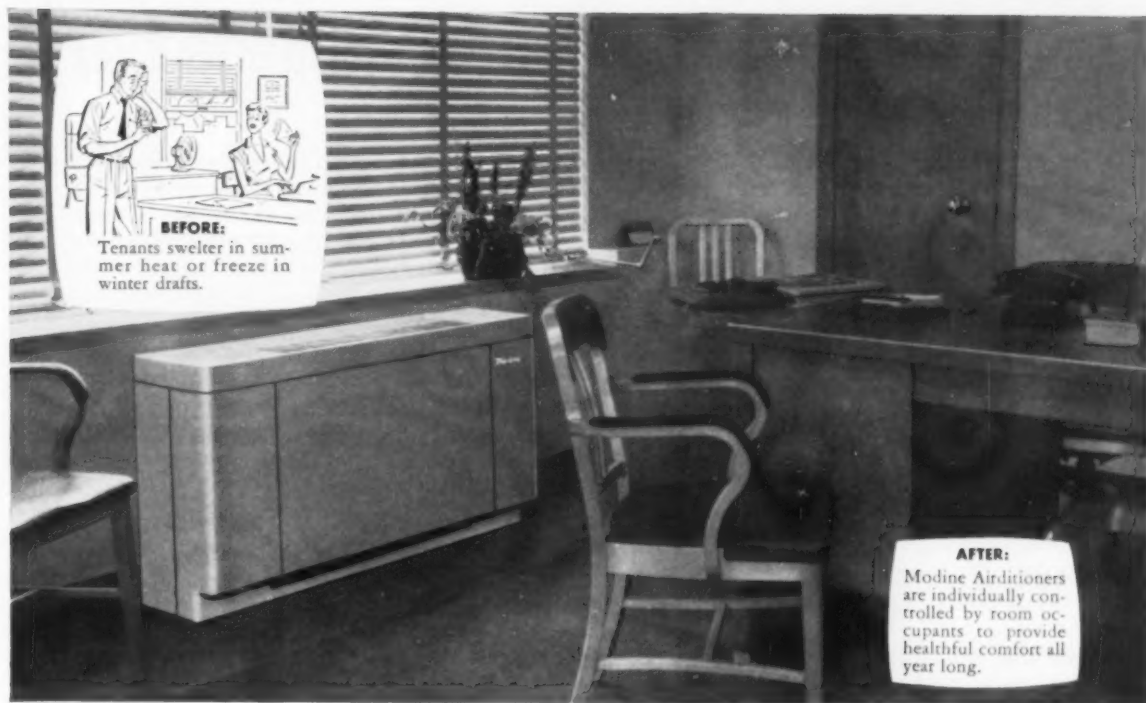
**Lehigh BLU-COLD
CONDENSING UNITS and SYSTEMS**

Lehigh Manufacturing Co., Lancaster, Pa.
Division of Lehigh Foundries, Inc.

**WRITE FOR
CURRENT
CATALOGS**

Manufacturers of Malleable and Grey Iron Castings • Refrigerating Equipment • Air Valves • Automatic Vending Machines

Air conditioning existing buildings may be easier than you think...



It's as simple as this, with *Modine Airditioners**

- 1. Individual units replace radiators** in each room to be air conditioned. Hot water from your present boiler is piped to each unit for heating. Cold water from a central chiller is supplied through the same piping for summer cooling. A small motor (1/30 to 1/12 hp) operates two quiet fans in each AIRditioner to provide refreshingly cooled or heated air circulation. There are no expensive ducts to install. Here is low-cost, year-round comfort for new or existing office and apartment buildings, hotels or motels, hospitals or homes.
- 2. Operating flexibility cuts costs.** With Modine AIRditioners, room occupants control their own temperatures. Units are operated only when and where they are needed. No need to air condition an entire building to provide comfort only in occupied rooms.
- 3. Types and sizes for every application.** AIRditioners are offered in console (illustrated), concealed, built-in overhead and exposed ceiling models . . . in sizes to meet your remodeling or new construction requirements. All units are furnished with quiet, slow-speed

*Trademark

motors (1050 rpm top speed) having built-in thermal overload protection as a standard safety feature.

Want to know more?

Consult the classified section of the phone book for your Modine representative. Contact him or mail the handy coupon for illustrated booklet.

MODINE MFG. CO.
1584 DeKoven Avenue, Racine, Wisconsin

Gentlemen: Please send me a free copy of Bulletin 745-D, describing Modine AIRditioners.

Name

Firm

Address

City Zone State

A-1283



Circle No. 31 on Reader Service Card

WORTHINGTON DEALERS ARE SUCCESSFUL DEALERS!



"Worthington put an end to my financing headaches"

"It takes money to make money," says Nat Jewell, Hot Springs, Arkansas' leading air conditioning and refrigeration dealer. Like many another Worthington dealer, he's enthusiastic about the financial backing that's part and parcel of the Worthington franchise. Here's what Mr. Jewell says about it:

"The kind of inventory I need at the start of the selling season would ham-string me financially — except for one good reason — Worthington doesn't tie up my capital when I need it most! When sales get ready to roll, I've got a warehouse full of products . . . and still have money in my pocket for all the advertising and sales help I need to do a good job. As far as I'm concerned, Worthington's got the broadest and most sensible financing program in the business."

Worthington can end your financing worries — 6 ways!

SEASONAL DISCOUNTS

Save up to 5% on carload lots by ordering in advance of the season. Early ordering assures sufficient stock and saves you money.

FIELD WAREHOUSING PLAN

Set up a complete inventory in your own warehouse and pay for it as you use it. Put your capital to work as you see fit.

RETAIL FINANCE PLAN

Retail dealers can discount their retail paper through Worthington (or through their local bank) . . . guaranteeing 48-hour service.

RE-PURCHASE AGREEMENT

The re-purchase agreement is designed to increase your present line of bank credit, enabling you to carry more stock — and sell more.

DEFERRED PAYMENT PLAN

Keep off-season sales high by inviting prospects to buy now . . . pay months later. Small down payment covers your installation costs.

CO-OP ADVERTISING

Reap benefits of Worthington's big-money national advertising program . . . plus generous co-op advertising plans.

Like Nat Jewell, you'll agree that Worthington backs its dealers to the hilt with the "broadest and most sensible financing program" in the industry. It's just one of many reasons why Worthington dealers are successful dealers. You'll find many more in Worthington's new monthly publication, "The Merchandiser." Write for it today. Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.5.49-C, Harrison, New Jersey.

A.5.49

WORTHINGTON



THE BEST FRANCHISE . . . THE MOST COMPLETE LINE

Circle No. 32 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

**Service men
"at your
fingertips"
...all the time...with
RCA 2-Way Radio**



GET THE BEST—GET RCA 2-WAY RADIO. Quality that only the leader in radio and electronics can offer gives assurance of top performance under the most gruelling conditions. Simplest maintenance and operating requirements.

Refrigeration and air conditioning service men are "on hand" any time they're wanted, with RCA 2-Way Radio. It's just as if the supervisor were sitting alongside each one, wherever they go!

Radio is used to relay service requests to trucks on the road and to receive requests from drivers. A truck can be reached whether it's moving or parked. Unusual situations can be handled quickly by two-way conversations between trucks and the office. Regular office personnel can operate the radio—it's just as easy as your telephone.

Wasted service time is reduced. Average minutes per call are cut—up to 18%. Productive truck time is increased—15%-20% more calls daily are possible. Backtracking is made unnecessary. Average miles per call are decreased up to 16%. Rerouting trucks is a simple matter—as the need arises. Service men do a more efficient job. Considerable telephone expense is saved, and customers are enthusiastic about the service—it means money in their pockets!

The RCA Service Company provides installation and service to keep your equipment operating at its peak.

-----USE HANDY COUPON BELOW FOR COMPLETE DETAILS-----



**RADIO CORPORATION
of AMERICA**

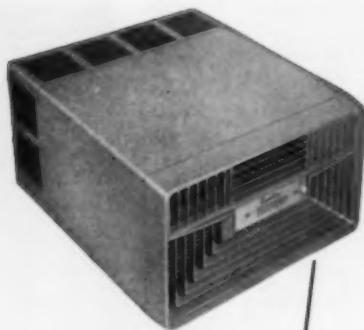
COMMUNICATIONS EQUIPMENT
CAMDEN, N. J.

Radio Corporation of America, Communications Equipment
Dept. W-261, Building 15-1, Camden, N. J.
In Canada: RCA VICTOR Company Limited, Montreal

- ☐ Please send me literature on RCA 2-Way Radio for Service Operations.
☐ Have an RCA Communications specialist contact me.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____ COUNTY _____
CITY _____ ZONE _____ STATE _____

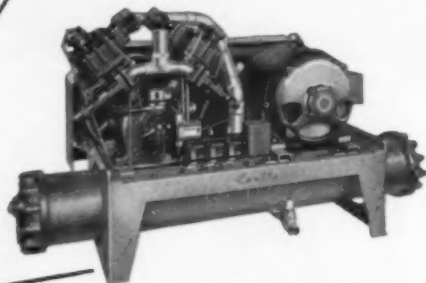
Circle No. 33 on Reader Service Card



Window Air Conditioners



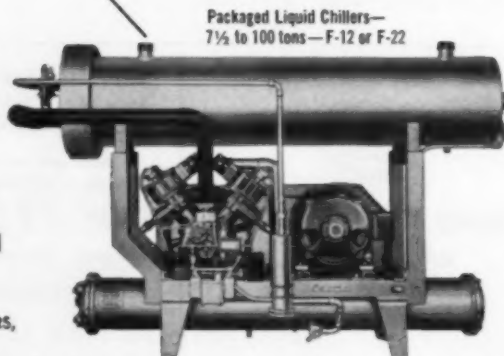
Packaged Air Conditioning units—2 to 20 tons



Condensing units up to 100 tons—F-12 or F-22



Multi-Zone Units—serving 2 to 8 zones



Packaged Liquid Chillers—7½ to 100 tons—F-12 or F-22

**More jobs...
More profit!**

WITH THIS

**complete
Curtis
LINE**

You'll sell more jobs, and make more profit, with this well-rounded Curtis line. Curtis equipment sells readily because it is backed by one of the oldest and most respected names in the business. Curtis products are presold for you by hard-hitting national advertising in *Saturday Evening Post*, *Time* and *Newsweek*, plus many national business and trade magazines.

WRITE TODAY for information on how you can obtain a Curtis direct factory franchise.

Curtis REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1915 Kienlen Avenue, St. Louis 20, Missouri

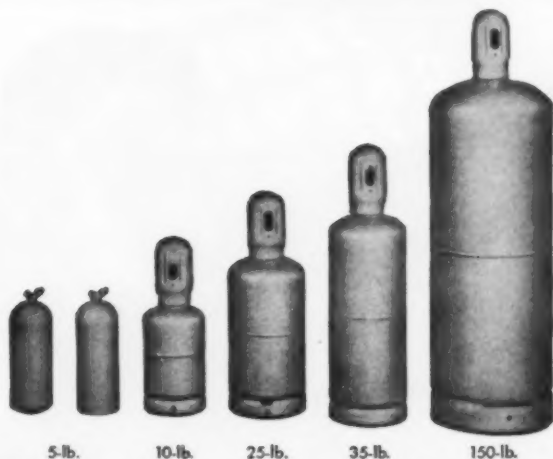
Other Curtis Products: INDUSTRIAL AND AUTOMOTIVE AIR COMPRESSORS,
AUTO LIFTS, CAR WASHERS, AIR HOISTS

Circle No. 34 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

**DON'T
SETTLE
FOR LESS**

use
Prest-O-Lite
Trade-Mark
**CYLINDERS FOR
REFRIGERANTS**



- ✓ Rugged, sturdy construction
- ✓ Uniform sidewall thickness
- ✓ Lightweight—easy to handle
- ✓ Finest workmanship
- ✓ Best appearance
- ✓ Tested far beyond all codes
- ✓ Extra years of trouble-free life
- ✓ They're economical!

You are *sure* that your refrigerant gas containers will give you many years of dependable service—and save you extra dollars—when you own PREST-O-LITE cold-drawn cylinders. They're built by the company which has been the largest manufacturer and user of compressed gas cylinders for almost half a century. In each step of design and fabrication the ultimate in gas containers is achieved—and this skill and experience is passed on to you with every PREST-O-LITE cylinder you get. It's no wonder that refrigerant cylinder buyers who have compared feature for feature have found out they are getting the greatest value with top-quality PREST-O-LITE cylinders.

Available in size, ranging from 5-lb. to 150-lb. capacities—with valve, and cap on all but 5-lb. styles. A few of the popular squat-type cylinders are shown above. You'll like their good-looking appearance, with glossy metallic bronze finish. WRITE TODAY for full information and prices—select the PREST-O-LITE cylinder that fits *your* needs exactly.

MADE BY

Linde

"Prest-O-Lite" is a registered trade-mark of Union Carbide and Carbon Corporation.

LINDE AIR PRODUCTS COMPANY

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street  New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY

Division of Union Carbide Canada Limited, Toronto

Circle No. 35 on Reader Service Card

"'Freon' has helped me cut free service calls up to 60% through the past 18 years"

*says Mr. Leo Bronstein, President of
Capitol Refrigeration Co. Inc., Albany, N. Y.*



"**THE CLEAN, DRY QUALITY** of 'Freon'* refrigerants actually helps me increase the profit on our operations, and at the same time keeps the good will of our customers," states Mr. Bronstein. "It's always been our policy to give an unconditional one-year guarantee on all installations. But with service calls during that year at our expense, the fewer there are the better off we are. Since we first started with 'Freon' in 1937, I'd say that its purity and efficiency have reduced our free service calls as much as 60%."

Capitol Refrigeration is the oldest eastern distributor of Friedrich Refrigerators, Inc., and has built a strong reputation in the field of com-

plete store installation layout and engineering. Mr. Bronstein's son, Don, is the company's assistant engineer, and points proudly to several articles on the subject written by Mr. Bronstein for trade publications.

Like many other experienced men in the refrigeration field, Mr. Bronstein has noted that customers come to know and rely on Du Pont "Freon" fluorinated hydrocarbon refrigerants. It isn't surprising, because customers learn that "Freon" refrigerants give long, dependable service. Customers also like to know that "Freon" is safe . . . nonexplosive, nonflammable, virtually nontoxic.

Protect your customers and yourself by insisting on pure, dry, acid-

free "Freon" refrigerants by name. For further information write to E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.



Circle No. 36 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

THE NEW IDEA!

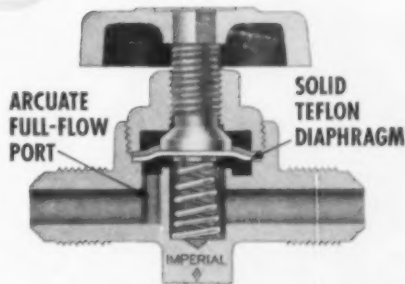
in REFRIGERATION VALVES

**IMPERIAL
DIAMOND
VALVE**



NOW $\frac{2}{3}$ the Size WITHOUT REDUCING FLOW!
Cuts Valving Costs

- Introduces an entirely new idea in refrigeration valving practice.
- Matches the industry trend to more compact installations—it fits into much smaller spaces.
- Economy . . . cost of valving is substantially reduced.
- Solid TEFLON Diaphragm . . . impervious to all refrigerants . . . long lasting . . . withstands unlimited openings and closings.
- Also other advanced design features . . . such as arcuate full flow ports . . . mean top efficiency.
- Quick easy finger-tip operation.
- Copper tube extensions on solder type dissipate heat so valve can be soft or silver soldered into line without disassembling.



Ask for Bulletin No. 115-REF

Emblem of Quality



THE IMPERIAL BRASS MFG. CO., 836 S. Racine Ave., Chicago 7, Ill.
In Canada: 334 Laurier Ave., Toronto, Ontario

IMPERIAL

FITTINGS • VALVES • DRIERS • FILTERS
FLOATS • CHARGING LINES • TOOLS for
Cutting, Flaring, Bending, Pinch-Off, Swedging

"I've seen the **AMPROBE**
save us time and money
on call after call..."

says George Heinz, Jr.,
New York service manager for

Servel



"The Amprobe is a 'must' here at Servel! Every one of our mechanics, both on the bench and in the field, is equipped with an Amprobe snap-around volt-ammeter. Our records show hundreds of cases where the use of an Amprobe quickly indicated the trouble and avoided costly time-consuming guesswork.

"One of the things we like best about the low-cost Amprobe Jr. is its easily-visible, calibrated scale. But most important, it can check current without shutting down equipment—and on window units it gives us current readings at the receptacle with the simple addition of the Energizer attachment. I can enthusiastically recommend the Amprobe as the principal testing instrument for any up-to-date service shop." George Heinz, Jr., Servel Appliances, Inc., New York Service Dept. Manager.

There's an Amprobe for every job, every budget: from 10 amp and 250 volts capacity up to 1200 amp and 600 volts; from \$19.85 to \$67.50. See them at your jobbers today. PYRAMID INSTRUMENT CORP., LYNBROOK, N. Y.

AMPROBE®

snap-around volt-ammeter
... recommended as standard
testing equipment by America's
leading service managers.



Mail Coupon for Free Service Bulletins

Pyramid Instrument Corp.,
Dept. CRA-95, Lynbrook, N. Y.

Please send me the Amprobe service bulletins checked below:

- ☐ Know your UL wiring standards for room units
- ☐ Trouble-shooting electric motors
- ☐ 14 ways a volt-ammeter can boost your service profits

NAME _____

ADDRESS _____

COMPANY _____

CITY _____ ZONE _____ STATE _____

Janitrol MAKES IT EASY TO SELL HEATING-COOLING COMBINATIONS!

...with THE FAMOUS JANITROL DUCT HEATER

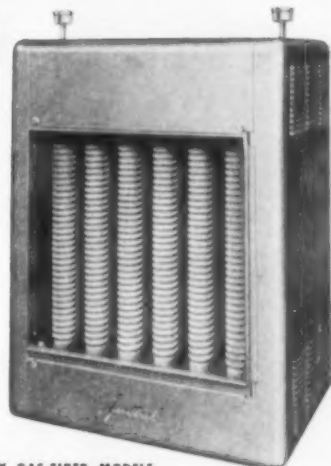
- Low Initial Cost • Compact, Space Saving • Fast Installation

For 15 years Janitrol has pioneered in DUCT heater applications for combinations of ventilating, heating and cooling systems.

Janitrol's present DUCT heater with its exclusive design of lightweight, armor-coated heat exchanger is corrosion-resistant and ultra-durable. It was designed specifically to meet the more rigid requirement of air conditioning engineers for a fortified heat exchanger.

Proof of the durability of the Janitrol DUCT exchanger is its replacement record over the past 7 years (less than 1/4 of 1%) for all causes.

Note: All DUCT heaters should be installed in accordance with the procedures established by AGA and ASA.



SIX GAS-FIRED MODELS
Capacities: 85,000 to 450,000 Btu/hr.

...plus TIE-IN COOLING WITH JANITROL PACKAGED UNITS

Choose from this selection of Janitrol quality-engineered summer conditioners . . . all backed by Janitrol's extensive experience in air conditioning! Space-saving horizontal models in 2 and 3-ton sizes; free-standing cabinet models in 2, 3, 5, 8, 10 and 15 ton capacities. Refrigeration circuits all carry 5-year warranties. Air cooled conditioners are available in smaller capacity models.



2-3 TON

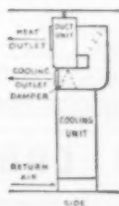
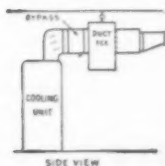
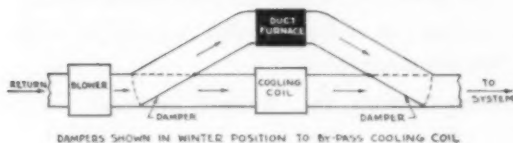


2-3 TON



8-10-15 TON

TYPICAL COMBINATION SYSTEMS

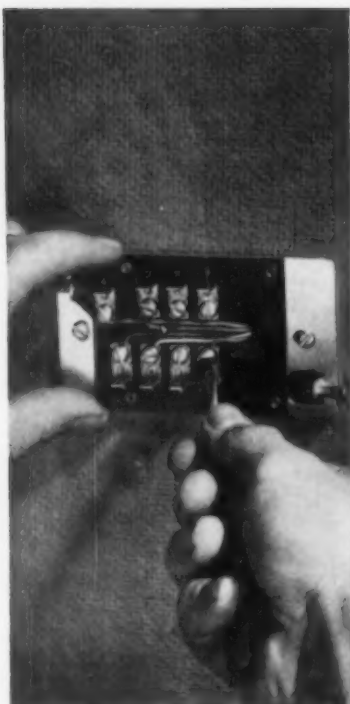


WRITE FOR COMPLETE SPECIFICATIONS

For installation and performance data, ask for Form 50-205, Summer Conditioners Form J5-215, Duct Heating Write to Dept. CR 59.

Janitrol
HEATING AND AIR-CONDITIONING
DIVISION

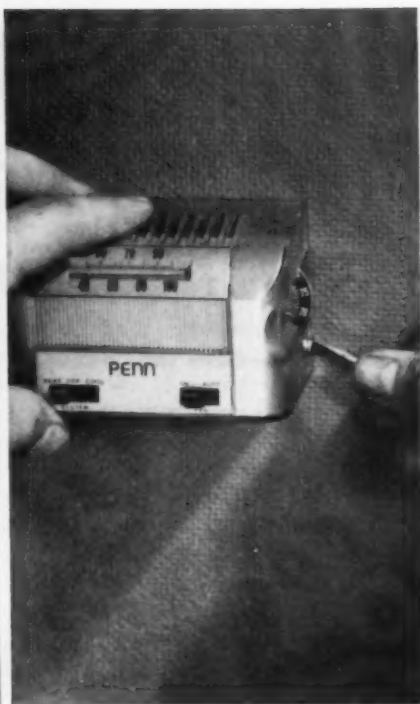
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Alvar Simpson Ltd., Toronto 15



1. Two screws secure mounting base to wall. Then connect wires to terminals.



2. With the cover removed, just push the room thermostat on mounting base.



3. Place cover on thermostat and secure it by tightening two screws . . . one on each end of mounting plate.

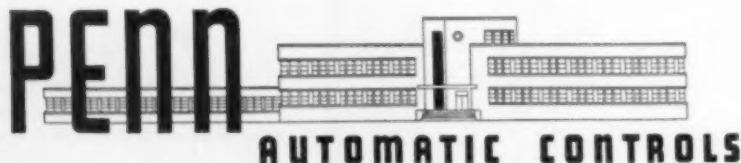
3 SIMPLE STEPS TO INSTALL NEW HEATING-COOLING ROOM THERMOSTAT

save time, labor and money

No fuss . . . no critical alignment . . . no hard-to-get-at terminals . . . only the Penn heating-cooling thermostat is so easy to install! But, that's not all. Only Penn gives you "heat anticipation" to hold heating temperature

within one-half degree of selected level . . . and, "cold anticipation" to assure closer control of cooling temperature and lowest relative humidity. Be sure the packaged air conditioning you sell and install is equipped with Penn automatic controls.

Penn Controls, Inc., Goshen, Indiana.



FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Circle No. 40 on Reader Service Card

SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION



Five years ago, on the occasion of our twentieth anniversary in business, we ran the accompanying editorial. It is just as true today as it was then. Change the figure "20" to "25" and you have our story today EXCEPT that we have enjoyed five more years of building, five more years of health, five more years of God's blessings for all of which we are truly thankful. We will do our utmost in the next five years to maintain your respect and confidence.

25 years

THE FACT that our company is 25 years old this month is relatively unimportant to anyone except ourselves. Thousands upon thousands of other companies have become 25 years old, and much older. But to us, the important thing is the way in which this company started, and the way it has progressed these 25 years. Because only in America could this story have been written.

This company started on the ashes of a depression failure. Our first magazine, *INDUSTRY AND WELDING*, had 24 pages in each issue, of which 3, 4, 5, or 6 were advertising. At 3, 4, or 5 pages, we couldn't pay our printer, but with 6 we could just make it. Whether there were 3, 4, 5, or 6 pages of advertising at no time removed the personal necessity of eating, dressing, and traveling to get the 7th, 8th, and 9th page of advertising. Somehow, we muddled through. In America, you can do those things—with pride.

Many were the times when it looked as though we couldn't make it, and always, when it looked blackest, some miracle would happen and we'd be in business—for another month at least. We stuck. Friends were good to us. People had faith in what we were doing. You find that Americans like to help other Americans who are trying to help themselves. It is the essence of our country, of free enterprise.

No government questioned our right to be in business. No bureau told us what to print or how it should be said. We were free to make whatever profit we could manage and reinvest it in our own business or in any other way we saw fit. That, too, is the American way.

We chose to start magazines in other fields. No one told us what fields to start in or whether we could go into them. As long as we were willing to work and take the beating that every new, small business must take, we were permitted to build our own business in our own way.

These 25 years have been gratifying ones. It has been fun building a business. There's been a lot of hard work, long hours, and various worries, but we're glad we're in the publishing business, because we feel that we have contributed something to industry and to the general welfare of our country. We shall continue to do so. But again we say, **ONLY IN AMERICA COULD THIS STORY HAVE BEEN WRITTEN.** It is one of our great heritages which, unfortunately, we take for granted, and it's one worth keeping and worth fighting for.

Irving B. Hexter

Irving B. Hexter, Publisher



No need for knees when
BENDING *



Save your energy! Use dead-soft DRYSEAL. You can make the most intricate bends with your fingers . . . no tools of any kind required. And its ductility and special temper make it extremely easy to flare for compression fittings without danger of splitting. To make sure you get a tube that is free of even the slightest trace of dirt or moisture we double crimp DRYSEAL on both ends, at the factory. This is the final step in manufacturing, immediately following a special cleaning and dehydrating operation, which keeps dirt and moisture from entering the tube. This double crimping does not interfere with installation for it is made in such a way that it permits DRYSEAL to be passed through any opening large enough for the tube itself. Tube sizes— $\frac{1}{8}$ " to $\frac{3}{4}$ " O.D. The DRYSEAL carton, attractively designed for easy identification, contains one 50-foot coil . . . is easier to handle, light weight, economical and sturdily made to assure protection of the tube in stock and in transit.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

*Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.*

*** REVERE**
DRYSEAL
COPPER
REFRIGERATION
TUBE

MODERN REFRIGERATION on the edge of a South American jungle—it's coming in a few weeks to the food buyers of Cucata, Colombia, a small city just a few miles from the Equator. Sixty-two refrigerated meat and delicatessen cases were recently shipped to the tropical community by Bally Case & Cooler Co. They're destined for a large new government-subsidized food market just opened by the municipality. The cases, all self-contained, are to be used at food stands to be rented to private concessionaires—and they're believed to be the largest single installation in the country.

AUTO AIR CONDITIONING demand this year is far ahead of 1954, car manufacturers report. Buick, for instance, claims installations of almost 24,000 units this year against slightly over 7,000 last year; Oldsmobile reports 14,000 compared to 6,000 in 1954, Pontiac 4,300 against 1,400, Chrysler 8,800 against 2,300. Ford estimates its 1955 installations at about 6,000 units, Nash's installation rate is about double that of 1954, Lincoln reports 9.1% of its deliveries have included air conditioning, and about 6% of Packards for 1955 were equipped for cooling at the factory.

THE FIRST SUBSIDIARY PLANT of A-P Controls Corp. beyond the North American continent is being constructed at Nijmegen, Holland, and is expected to be finished by Dec. 1 of this year. With 18,000 sq. ft. of floor space and equipment, the plant will represent an investment of \$200,000. The operation will be a wholly owned subsidiary, but no personnel from A-P's Milwaukee headquarters will be assigned to the Nijmegen plant.

PASSING UP A VACATION to help a company meet delivery schedules is the news-making action that has been taken by a majority of the more than 1400 production employees of Copeland Refrigeration Corp. These workers stayed on the job during the first two weeks of August, normally the company-wide vacation time, to keep customers' orders moving on schedule. Employees' action in foregoing their vacations on a plant-wide basis is believed to be without precedent in the air conditioning and refrigeration industry. Copeland's request to its employees stems from a 70% increased demand in 1955 for air conditioning and refrigeration compressors and condensing units, officials said.

A NEW SCIENTIFIC DEVICE known as "P-6", which acts chemically to overcome smoke and fumes, is to be used on all planes belonging to Swissair, the airline of Switzerland. It is a development of nine years' research by Dr. Walt L. Phillips, of Phillips Scientific Laboratories, Newark, and we mention it here because it appears to have an important potential application in the air conditioning and refrigeration field. In technical parlance, "P-6" is a hydrocarbon chemical, non-toxic and non-irritating, that prevents sensitization from tobacco, cooking and other odors by disintegrating these odors as they form. It's so effective that cigar-smoking will actually be encouraged on Swissair flights. The chemical, which is odorless, will be placed in fiberglass-filled containers 1" in diameter and 4" long, attached below passengers' seats, on alternate rows, and in the flight kitchen, washrooms and crew compartment.

PLANS TO ESTABLISH a watermelon juice bank have been initiated recently in Beaumont, Tex. Watermelon juice is often prescribed in the treatment of a rare kidney disease which usually strikes children, and searches have been conducted all over the United States in instances where the juice was needed during the cold weather months and no fresh watermelons were to be had. Now it is proposed to store a supply of the liquid in freezers, for use whenever and wherever it is needed.

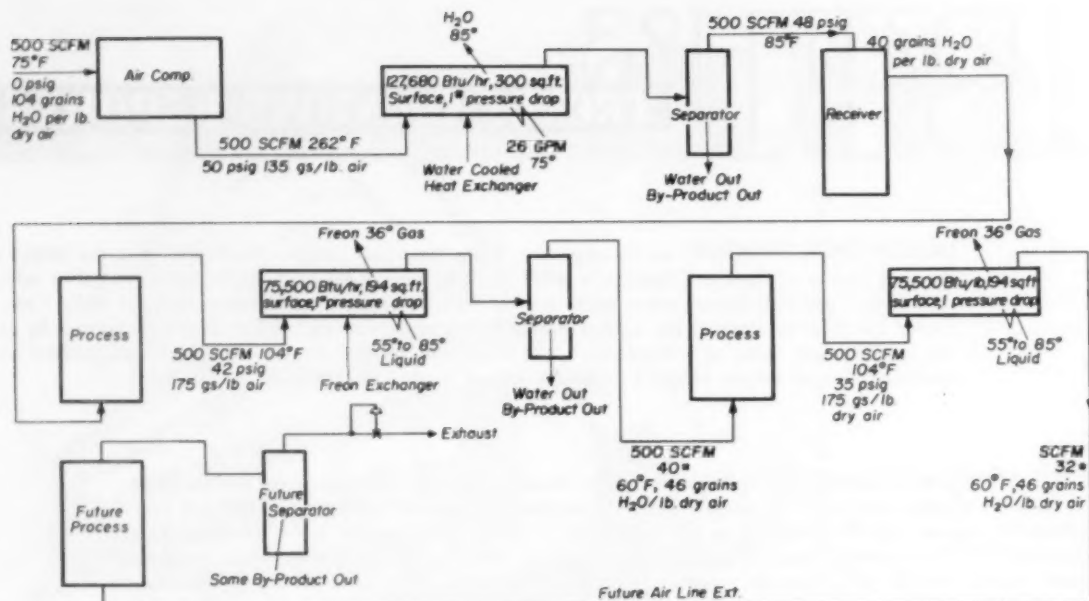


FIG. 1—Typical process air flow designed by this industrial firm for its own specific needs shows how the same air is used twice by refrigerating out excess moisture between two parts of the process.

HOW
15 HP
SAVED 75

Industrial processing often requires demanding conditions. In this instance, an ingenious application of refrigerating equipment not only solved a tough dehumidification problem for this industrial concern but saved the firm money, too.

by A. F. Binder

mechanical engineer, Becco Chemical Div.,
Food Machinery & Chemical Corp.

HOW 15 hp expended on refrigeration to produce the necessary dehumidification required to satisfy a specific set of processing conditions effectively saved 75 hp which otherwise would have been required to drive an air compressor of 500 standard cfm capacity is part of the power conservation story behind a recent installation made by Davis Refrigeration Co., Inc., Buffalo, N.Y., in the plant of Becco Chemical Div., Food Machinery & Chemical Corp.

Furthermore, in this system designed by Becco engineers, it has been found that with two-stage regeneration and dehumidification a total of 150 hp, as well as 1000 cfm of air, has been saved.

Since a valuable by-product can also be recovered from the air stream at the same time that the moisture is removed, it is calculated that the total savings of the system amount to the capital investment required for one 500-cfm air compressor, plus approximately \$14 an hour in the value of the recovered by-product for every hour that the plant runs with the refrigeration system in operation, as compared to the operating expense without the dehumidification scheme being employed.

As part of one of its many processes the Becco organization had need for approximately 1000 standard cu. ft. per minute of air at 8-20 lbs. gage and whose temperature, while not important, had to be such that not over 40-50 grains of moisture per pound of dry air was present with the air. As the particular process in

mind resulted in considerable temperature latitude for the air, it was decided to try to design a system of refrigeration that would allow the same air to be used twice, by refrigerating out excess moisture between two parts of the process.

To this end, a system was set up more or less as shown in Figure 1. It was decided that only 500 standard cu. ft. per minute of air would be pumped, with a conventional single stage carbon ring air compressor utilizing a water-cooled after cooler, water separator, and receiver.

The designed basis for the ambient air was taken as 80 F, 135 grains of moisture per pound of dry air, and 500 standard cu. ft. per minute compressed to 50 lbs. gage. The air discharged from the compressor would be at 50 lbs. gage, and 262 F and have the same moisture content and volume flow.

Based on an aluminum tube heat exchanger of approximately 300 sq.ft. surface, with incoming water at 75 F, and limiting the water rise to 10 degrees, the air leaving the water cooled exchanger would lose about 127,680 Btuh, and be increased in temperature to 85 F, while its total moisture content would drop to 40 grains of moisture per pound of dry air maximum.

By flowing the same air through two different pieces of process equipment, and cooling in between the process equipment, the total air demand could be held to 500 cfm but approximately 135 grains of moisture per pound of dry air would have to be removed, and in addition there would be a sensible head load of approximately half again as much duty. As discussed before, this resulted in a rise of air temperature from the conditions previously given to 104 F while the total moisture content of the air went to 175 grains of moisture per pound of dry air. The pressure drop was negligible, being in the order of 3 pounds per sq.in. gage.

This imparts a total load on the cooler of about 75,500 Btuh. Two-thirds of this load was the result of condensing moisture out of the air so that the air could be once again reused, while the other one-third represented cooling the air to such a temperature so that, while saturated with moisture vapor, its total humidity was only on the order of 46 grains of moisture per pound of dry air and its temperature approximately 60 F.

For this service it was decided that a Freon-12 refrigeration system would be the best application. There was one precaution that had to be taken—namely, that the Freon evaporating temperature could not be less than 36 F so that there would be no possibility of freezing the moisture within the cooler while attempting to extract it.

This kind of system can be worked indefinitely between various pieces of process equipment so long

Continued on page 95

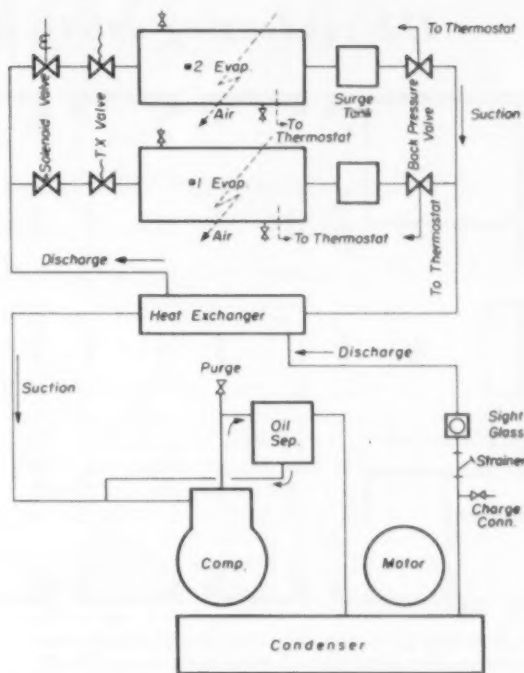


FIG. 2—Refrigerant flow diagram illustrates the hookup of the various refrigeration components which were combined in this installation to achieve the necessary degree of dehumidification.

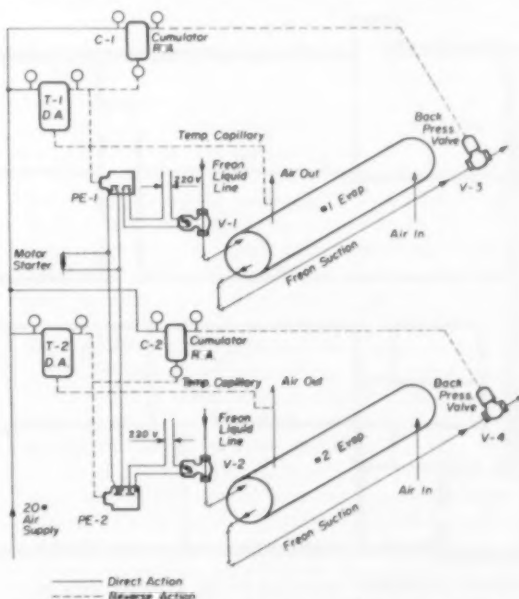
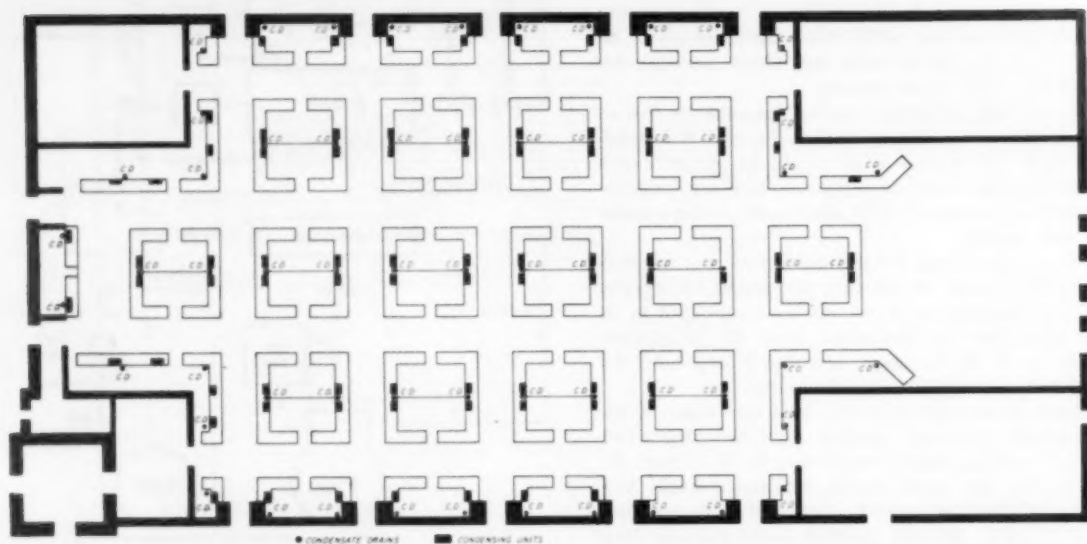


FIG. 3—Hookup of the control system which was designed to provide maximum processing flexibility by making it possible for air temperature leaving each cooler to be varied independently.

112 condensing units—none over 5-hp—make up this



SALES FLOOR of this big city-owned public market is broken up into separate stalls, most of them in the form of hollow squares, which are leased by individual tenants. A total of 92 specially designed and custom fabricated display counters had to be supplied to renovate this area. Only 81 of these cases

were refrigerated, each with a 1/2-hp condensing unit, at the time of the installation. The others were intended for non-refrigerated products. Condensate drains were provided for all 92 locations, however, so that any of the remaining cases could be readily refrigerated in case the needs of the tenant should change.



STORAGE COOLERS constructed in the basement were refrigerated by means of duplex systems using at least two condensing units on each room. Numerals within the squares denoting the 29 condensing units indicate whether those units are of 2, 3, or 5 hp. The circled numerals tying together these

pairs of condensing units indicate the room on which these units operate. Lettered blocks indicate the 60 evaporators, coded by basic capacity rating as follows: A, 1200 Btu; A-1, 1350 Btu; B (hot gas defrosting units on the freezer), 1750 Btu. Two ammonia units formerly had been used in this area.

140-TON FOOD MARKET JOB

To sell the market's architects and professional engineers on the idea of using hermetic condensing units, this contractor had to formulate a 3-point program of equipment protection

WHEN a major metropolis decides to completely rehabilitate one of its outmoded public markets, it means that a whale of a big food refrigeration job is thrown open to competitive bidding. That's exactly what happened in Cleveland, Ohio, when that city determined to bring up-to-date the food display and storage facilities in its sprawling West Side Market.

After much delay and considerable deliberation by both city officials and market tenants, Refrigeration Sales Corp., a local contracting firm, walked off with this \$231,000 order (\$125,000 for display fixtures, \$50,000 for refrigeration and accessories for these fixtures, and \$56,000 for refrigerated bulk storage rooms) on the basis of a bid which in effect broke down this one big job into a lot of little jobs. In this way the contractor managed to minimize many installation and maintenance problems, while at the same time providing the market's tenants with the last word in flexible and reliable refrigeration facilities.

As an indication of how antiquated the old market was, no refrigeration facilities whatever were provided on the sales floor except for the dairy stands which had butter wells that were cooled with circulating brine. All other food was simply displayed on marble slabs behind counter glass, with no refrigeration of any kind. The bulk storage rooms in the basement were refrigerated by two old ammonia compressors, one of 65-ton capacity and one of 45-ton.

14 Storage Coolers—92 Display Cases

Renovation of this market required a total of approximately 140 tons of refrigeration, but the installation was carefully planned so that the biggest compressor used (there were 112 in all) was of 5-hp capacity.

The 14 cold storage rooms in the basement required the application of six 2-hp hermetic condensing units, fifteen 3-hp units, and eight 5-hp units, together with a total of 32 cold diffusers having a basic rating of 1200 Btu, 25 cold diffusers rated at 1350 Btu, and three automatic hot gas defrosting evaporator units rated at 1750 Btu each.

A total of 92 display cases, specially designed by Refrigeration Sales Corp. and constructed by Jewett

Refrigerator Co., replaced the antiquated old stalls on the market's sales floor. All of these were equipped with the necessary coils, condensate drains and connections for refrigerated application, although actually, at the time of the installation, only 81 of these were refrigerated, each with a 1/2-hp hermetic condensing unit located in the base of the stall. The others were intended for non-refrigerated products, but since the completion of the job three more of these cases have been put to refrigerated use, thus demonstrating the wisdom of providing the necessary facilities in the first place.

Display Case Design Was "Compromise"

Carrier condensing units and coils were used throughout the job to provide single manufacturer responsibility, with the exception of the automatic defrosting systems which were Kramer "Thermobanks".

Another advantage of using no compressors larger than 5-hp was that under these conditions it was not necessary for the commissioner of markets to hire an around-the-clock operating engineer.

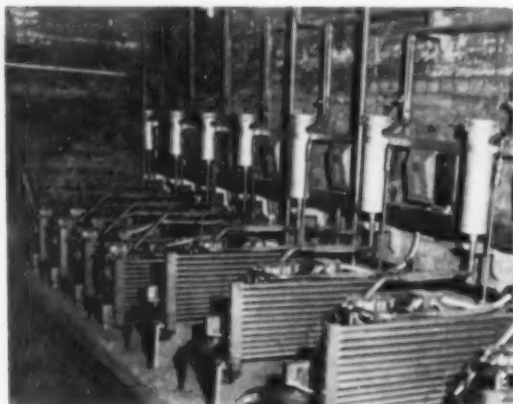
Design of the display counters actually was one of the critical factors in swinging this contract, as most of the market's stands are arranged in the form of a hollow square. The design submitted by Refrigeration Sales Corp. called for stainless steel cases having not only unusually deep display beds but also extremely narrow metal bands on the mitered corners of the display glass so as to combine maximum display area with minimum obstruction of shoppers' vision. Duplex "Thermopane" glass was used as a compromise between perfect see-through vision and a realistic approach to the condensation problem.

All of the market's 92 tenants, through their own association and six-man commission, had a voice in the design of these display cases, so the end result was actually a compromise which came as close as possible to satisfying everybody's idea of perfect merchandising display.

The 14 walk-in coolers located in the basement for bulk storage of meats, fresh produce, and frozen foods varied in size from 90 x 26' to 29 x 24'. Every one



PROTECTION against damage to the system by moisture or foreign matter in the long tubing runs was provided by installing a drier before each liquid line expansion valve in the coolers (above) and a combination filter-drier in the suction line at each compressor (below).



was equipped with a duplex system of refrigeration involving two separate systems for each 36 F room and three separate systems for the freezer.

As an example, Room No. 1 was provided with two 3-hp compressors, each connected to two cold diffusers having a total capacity of 65,880 Btu/hr. In operation, both compressors run when maximum load conditions exist, such as on a 90-degree day with a full product load of 13 tons of 65 F meat. During normal and light load conditions, however, the compressors will automatically alternate, one running for one cycle and the other operating on the next cycle. Adequate coverage of the room by either compressor operating alone is made possible by the fact that no two adjacent coils are hooked up to the same compressor.

Advantages of this type of system, which also was instrumental in winning the bid for this contractor, include the fact that operating standby protection is assured at all times, thus offering insurance against product loss in the event of equipment failure; extremely close temperature control, in some instances as close as $\frac{1}{2}$ of 1 degree plus or minus, is provided;

better humidity conditions are maintained as a result of better balance between load and system capacity, particularly during the eight months of the year when light loads exist; and the fact that a single compressor would be capable of maintaining a temperature of 39 F in the room in case of a breakdown of the other compressor.

To further enhance the safety factor of this installation, a spare compressor and motor assembly was provided for each size used, and also a spare motor was provided for each model of unit cooler employed.

In revamping this walk-in cooler installation, all of the old cork insulation was torn out and was replaced with 4" of corkboard around all rooms except the freezer, where 6" of corkboard was used. Both liquid and suction lines from all compressors to the coolers were insulated together with cork covering. All fittings were insulated with either hairfelt or Plasticork. This in itself was quite a project, inasmuch as some tubing

Continued on page 61



MODERNIZATION of the market's sales floor meant an end to the cluttered, non-refrigerated stalls shown in the photo above, from which meats and other perishables formerly were sold. Clean design and maximum product visibility of the new cases is shown below.





FIRST IN THE FIELD ON EVERY COUNT!

MUELLER BRASS CO.

Streamline

all-copper adapters

In just one year this new Mueller Brass Co. all-copper adapter has set a smashing record on every count . . . engineering, sales and performance. They are available as copper-to-male and fitting-to-male styles in sizes from $\frac{1}{4}$ " to $2\frac{5}{8}$ ". And, the dependability of this fine STREAMLINE adapter is proved by the fact that over 5 million have been put in service in the short space of one year. Many excellent engineering features have been incorporated in these adapters which are produced from heavy wall copper tube. Threads are rolled rather than machined, actually improving the grain structure of the metal and affording greater strength. The pure wrought copper is superior for soldering because heat is transmitted evenly and quickly. The smooth bore and the precision machined stops permit maximum flow. You'll like these new adapters, and the many advantages they offer . . .

and you know these "thoroughbreds" will live up to every claim because they're made by the originators of the solder-type fitting. If it's Streamline, it's got to be good.

FIRST developed by the originator of the solder type fitting

FIRST in sales with a record of over 5 million sold in just one year!

FIRST complete line in both O.D. and fitting ends

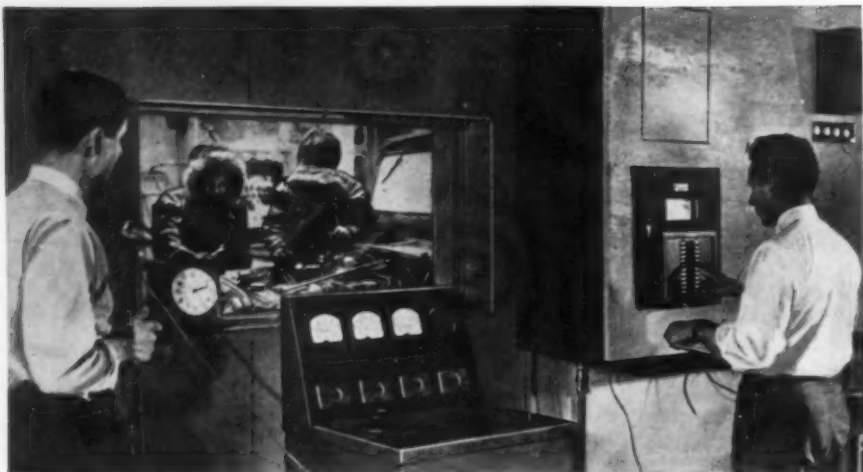


161-R



MUELLER BRASS CO. PORT HURON 10, MICHIGAN

Circle No. 42 on Reader Service Card



COMPLETE instrumentation is an essential part of any low-temperature test facilities. Both indicating and recording instruments are employed here as engineers watch a test through the observation window, and converse by intercom with the technicians in the room.

-90° ROOMS TEST HEATING EQUIPMENT for efficient operation at Arctic military bases

INSURANCE for America's future are the air bases, military outposts and weather stations which are being established in increasing number in the Arctic wastes lying within a few hundred miles of the North Pole in the belief that any attack on the continental United States, should it occur, might well be launched from this direction.

To help both the men and the equipment at these northern outposts function most efficiently in the sub-zero temperatures which they encounter, American industry has long been cooperating with the U.S. Government and its military services in a continuing program of low temperature testing and research.

One of the firms which has established its own low temperature facilities as a part of this program is Perfection Industries, Inc., Cleveland, Ohio. To help develop and test the line of engine heating equipment and other heating devices which it produces, Perfection has established a sub-zero laboratory large enough to simultaneous-

ly house two highway buses, or some of the largest military vehicles produced, and capable of producing temperatures down to -90 F.

This laboratory is located adjacent to the company's Engineering Building. The cold room proper is approximately 32' long by 30' wide by 16' high. The equipment access doors in the anteroom and main room measure 12 x 12'. Personnel doors are 4' wide by 6½' high. Three observation windows, each 4' wide by 2' high, provide visibility in and out of the main chamber.

The floor consists of a layer of rock cork 12" thick, sandwiched between two layers of concrete, each approximately 12" thick. A layer of well-tamped gravel lies underneath the lower layer of concrete. The wall contains 12" of rock cork with ½" of cement plaster on each side. Ceiling supports are wooden. On top of these wood supports is a layer of corrugated transite which supports another 12" of rock cork. The entire ceiling structure is described as the

floating type which permits movement required by differential expansion and contraction.

At -65 F, refrigeration capacity is 13½ tons, while at -85 F the ca-



HEATING DEVICES like this contaminated air heater must be given both start and operation checks at -65 F to insure positive performance under field conditions.

capacity is 7 tons. Refrigeration is provided by a two-stage refrigeration system. This refrigeration system includes two low stage compressors operating in parallel. These two compressors manifold into the suction of the high stage compressor.

Each low stage compressor operates in conjunction with its own evaporator coil. Each of these evaporator units has a capacity of 7.1 tons of refrigeration with a 10-degree temperature differential, and is equipped with a blower which delivers 15,000 cfm. Total air delivery of the two units is 30,000 cfm and results in room volume recirculation every 30 seconds.

The refrigeration system is charged with a total of 300 to 400 pounds of Freon-22.

The refrigeration system is capable of maintaining a temperature of -86 to -90 F for at least 72 hours continuously. It is also capable of maintaining -63 to -67 F with an equipment heat load of 38,200 Btu/hr. An auxiliary fan is capable of producing a wind of 25 mph at -65 F. Snow making facilities are also available. At +70 F, 200 cfm of exhaust products can be withdrawn from the room.

Continued on page 66



BIG ENOUGH to accommodate the largest of military vehicles, or two complete highway buses, is this low temperature test room operated by Perfection Industries.



LIVE LOBSTERS, displayed in this refrigerated tank, perked up sales of this product immediately for the First National Store in Hartford, Conn. Lobster sales increased from 250 to more than 600 pounds per week within two weeks after the new equipment was installed.

New Profit Builder for Food Stores?

SUPERMARKET management has for years looked with longing upon live lobsters as a potentially profitable item to merchandise. Unfortunately, the difficulty of keeping and displaying them properly, resulting in losses of 25 to 50% while lobsters were on ice in the store, has dissuaded most stores from the attempt.

A new lobster display tank, produced by Ruet Engineering Co., Brooklyn, N.Y., appears to have solved these problems, opening a lucrative new field to retail food stores.

The "Neptune" lobster tank houses live lobsters in clean, cold, circulating salt water which accurately simulates sea water, and is claimed to result in a loss of less than 1% while the lobsters are in the store. Cooling to 40 F is accomplished by a 1/3-hp refrigeration unit integral with the tank base. The capillary tube, which measures temperature and controls refrigeration, is immersed in fresh water inside a small vertical tube of plastic within the tank which protects the capillary from salt corrosion.

Self-contained and mounted on casters, the new tank keeps live lobsters in full view of customers and may be placed in a display window or at any point in the store. It requires no permanent plumbing for the weekly change of water which, with addition of the proper salts compound, is the only maintenance required. Mounted on a stainless steel, table-height base, the rectangular tank, which measures 22" x 48" x 16" deep, is made of 1/2" thick transparent Plexiglas acrylic plastic, chosen because of its resistance to salt water corrosion.

Circulation and aeration of the water is achieved by a 14" turbine wheel of green Plexiglas, located above one end of the tank, and rotated at 40 rpm by a concealed gear-reduction motor. Water from the surface of the lower compartment of the tank is picked up by the blades of the wheel and falls into the upper compartment of the tank through a tube of Plexiglas cemented to the open front of the wheel. Disposable glasswool in a green Plexiglas filter box cleans water falling from the wheel before it enters the tank again.

COMMERCIAL REFRIGERATOR SALES NEWS

How To Prepare & Present Job Proposals Is Subject of New Distributor Survey

IT is generally agreed that a prepared quotation, properly presented, is an important factor in the sale of commercial refrigeration equipment. What the quotation includes, how it is developed, and similar questions are, therefore, of more than ordinary interest.

How 69 distributor members of National Commercial Refrigerator Sales Association prepare and present job quotations is reported in a survey recently completed by the NCRSA headquarters staff.

The survey sought the answers to such questions as: "Do You Prepare Quotations on All Jobs?", "Is a Standard Quotation Form Used?", "Do You Use a Standard Folder as a Cover?", "Do You Include Brochures?", "Do You Quote Total Prices, or Price Equipment Individually?", "Is Installation Quoted Separately?", and the like.

Twenty-two distributors reported they prepare quotations on every job, and an additional 7 reported they prepared quotations on "nearly all" jobs. Nine firms said they prepared quotations "on large jobs only", eight did so "only on remodeling of stores", six "as requested by the customer", and four "on jobs for two or more fixtures".

Only 19 reported using a standard form for quotations, and 11 others indicated they use a special letter, plus an itemized list of equipment and/or literature. Virtually all of them typed their quotations, and included prices (unless, as one distributor commented, "we believe the prospect is inclined to divulge" them).

Forty-seven distributors use a standard folder as a cover for the

quotation, and 26 of them advertise on the outside of this folder. Six firms include their name and address only; four others list their firm name and the name of the prospective customer, or of the manufacturer they represent.

Fifty-three of the distributors include brochures with their written quotations, and only five reported that they did not do so on some occasions. On the question of whether they quoted total prices only or priced equipment indi-



vidually, 21 said they quoted total price, 20 quoted "both ways, depending on the job", 18 quote individually, and nine quote "as the customer wishes".

For 42 firms, quotations as made on an "installed" basis; while only two quoted f.o.b. factory. Between these extremes were 11 who said they quoted "mostly installed", another 11 who quoted "both ways", and two who quoted "as the customer wishes".

Forty-nine distributors quote net price; seven quote list less

discount; 12 quote both ways, and one distributor quotes list with no discount.

Most distributors reporting (37) do not quote installation separately. Fourteen firms do so when customers request it; 13 do so "sometimes"; four do in all instances; and one firm does so on complete store jobs.

To the question, "What Services are Included in Quoted Price?", a variety of answers were received:

One year's service and warranty, 15; 90 days free service and 1 year warranty on parts, 8; warranty, free inspection, and 1 year's service, 8; delivery, installation, all warranties and free service, 9; warranty and free inspection, 7; "all service", 7; warranty only, 3; 1 year's free service, 1 year parts, and 5 year warranty on compressor, 2; freight, delivery, removal of windows (if necessary), 1 year's service and warranty, 1; parts warranty and labor guarantee, 1; "whatever customer requests", 1; one free inspection, 1.

Fifty-four distributors reported that the head of the company reviewed quotations before they were submitted. Store layouts drawings are included by 40 firms in all instances, and 18 do not include them. Two firms show prospective customers the layout, but don't leave it, and two others turn the drawings over only after the order is signed.

Grocery stocking arrangements are included in their layout by 22 distributors, while 25 firms do not include them. Another nine said they did so "sometimes"; 4 did so "after order is secured"; 2 "when requested"; and 1 firm made verbal suggestions only.

To the question, "Are Electrical and Plumbing Connections Included in Your Layouts?", 29 firms said yes; 14 said no; 5 do when requested; 6 do "after order is signed and accepted"; 9 do "occasionally"; and 1 does "only when sure of order".

In 27 of the firms the salesman does the layout drawings; in 18 others it's the salesman working with the draftsman. Seventeen firms have the engineer make the drawings, and 4 firms have the draftsman do the job. Salesman and office personnel make the

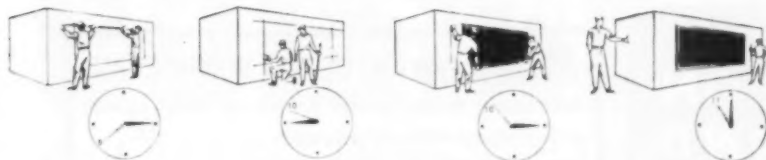
THE *Servue* FULL VISION *SWINGING* DOOR *ELECTRICALLY* HEATED FOR HIGH HUMIDITY AREAS (U. L. APPROVED)



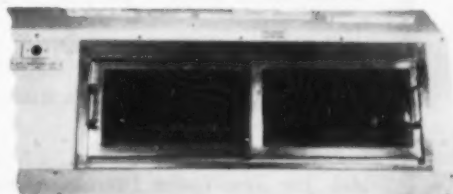
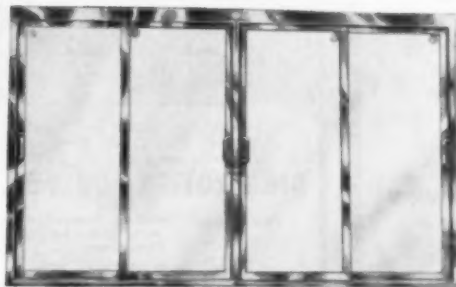
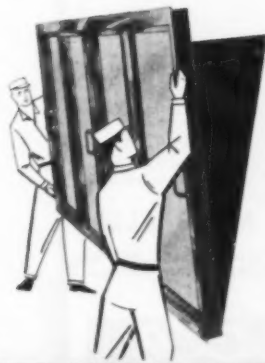
Easy to install unitized frame. Adaptable for installation in the smallest store to the largest super market.



All doors are insert type, set into frame and ready to place into any opening. For New and Remodel Reach-ins and Walk-ins. Complete package, including Back Assembly, of Posts, Shelves and Lights. U. L. approved.



NOW! THE *NEW* FULL VISION *SLIDING* DOOR



BARR MANUFACTURING CO.

COMPLETE INFORMATION UPON REQUEST

TELEPHONE LOCKHAVEN 8-4758
 8925 SAN LEANDRO ST., OAKLAND, CALIF.

SOME DESIRABLE TERRITORIES OPEN FOR AGENTS AND DISTRIBUTORS



PATENT PENDING

drawings in two companies, and company officials handle the task in one.

Thirty firms leave layout drawings with the prospect; 14 do not, and eight others report that they don't "if we can avoid it". Three do sometimes, 3 seldom do, two said it depends on the prospect, and one does "only if we are sure of the order."

The question, "When You Leave Brochures and Quotations, are They Sometimes Used to Your Disadvantage?" brought "yes" answers from 41, "sometimes" from 9, "not often" from 5 and "no" from 4. Three firms said it was "a necessary risk".

Almost all firms (65 of 69), however, agreed that layout drawings are a definite help in their selling efforts. Some of the general comments were:

"Most distributors who do a competent store engineering and turn in good layouts fail to appreciate the investment they have made in those layouts from a time and labor cost standpoint. If they will take the trouble to determine

their true cost of turning out such layouts they will realize it is a mistake to treat them lightly and toss them around like handbills."

"Proposals are very important — often the deciding factor on close jobs. We spend a great deal of time and effort to make our written presentations as complete and illustrative as possible."

"We feel that a complete proposal is necessary on any job of \$2000 or more — even smaller jobs can be sold more easily with a business-like proposal."

"We were the first to do store layout work in this area and the first to suggest stock arrangement. This did more for increasing sales than any other service rendered during the past years."

"We feel that another important part of our selling program is taking customers out to see our many installations. We have enough variety to show the prospect his 'future store' in operation. In addition, the satisfied merchant generally does a terrific selling job for you on your prospect."

9TH NC RSA MEETING TO STRESS SALES IDEAS

The ninth annual convention of National Commercial Refrigerator Sales Association will be held on Monday and Tuesday, Nov. 28-29, at the Hotel Traymore in Atlantic City, during the 9th ARI Exposition.

The two-day program, according to president George Wiedemer, will cover all phases of distributor interests and operations.

Although all speakers have not as yet been determined, some of the subjects to be covered include:

Leasing of Equipment (from the Profit Angle), Display Space for Frozen Foods, the Benefits of Selling Through Distributors, the Benefits of Buying from Distributors, the Benefits of Accounting Methods that Permit a Closer Check on Profits, Selecting and Training Salesmen, Inspiring Salesmen, How to Conduct a Sales Meeting, Building Profits with Packaged Air Conditioning, and Making the Sale.

This latter subject will be broken down to show six steps.

for installation of DUCT INSULATION USE TUFF-BOND M-102-H ADHESIVE

A Superlative-Economical product

Other outstanding products for the insulating contractor:

- ★ Tuff-Weld (nylon) insulation hangers
- ★ Gemco (metal) insulation hangers
- ★ Tuff-Bond general purpose adhesive
- ★ Tuff-Bond Quik-Set Adhesive
- ★ Tuff-Bond #500 (a high heat resisting adhesive)

Ask for descriptive literature and prices

GOODLOE E. MOORE

INCORPORATED
DANVILLE 25, ILLINOIS

Circle No. 48 on Reader Service Card

Pinnacle WALL TYPE BEVERAGE CASE

has many features not found in other cases, yet is competitively priced!



Here is a Quality Constructed Case you can sell with pride — that will give your customers the desired dependability plus modern beauty. Not a cheap piece in its whole construction. Frame is of No. 1 kiln dried Douglas Fir, screwed throughout. Fibre-glass insulation. Heavy wire shelves, plated to resist corrosion — adjustable 6" centers. U.L. approved lights. Automatic door switches. Better insulated doors and joints practically eliminate condensation and chance of short circuiting. Cooling system — cooling built-in forced air evaporators. Model WB526 (pictured here) is 6-feet wide, 70" high and 30" deep with four sliding doors. It has 50 sq. ft. of shelf area and will hold 48 cases of 12-ounce bottles.

Also available in 8 and 10 foot models in either life-time Porcelain or Stainless Steel. 8 and 10 foot models have 8 sliding doors and will hold 87 and 85 cases respectively.

BIG PROFITS FOR YOU, MR. DEALER!

A few Pinnacle Territory Franchises are still available. Wire or write today for full information and illustrated literature!

Pinnacle
EQUIPMENT CORPORATION
FLEETWOOD, PENNSYLVANIA
EXPORT DEPT.—39 Broadway, New York

Circle No. 47 on Reader Service Card
SEPTEMBER, 1955 • COMMERCIAL REFRIGERATION

INSIDE STORY

on CHASE® Extra-Soft Copper Refrigeration Tube



See this double-crimp! There's one on *both* ends of every coil of superior Chase refrigeration tube. It completely seals off the inside from contamination. Keeps it super-clean and moisture-free—in perfect condition to make highly efficient installations. The double-crimp is same size as the tube. It can pass through any opening large enough for the tube. You can leave it on until final connections are made!

OUTSIDE STORY

on CHASE® Extra-Soft Copper Refrigeration Tube



These compact, easily-handled cartons serve a double purpose! First, they positively identify diameter of the 50 foot coils inside. Second, they protect the perfect, flat, double-layer coils until you need them. Coils themselves are as clean on the outside as they are on the inside! Smooth, flawless, precisely tempered to just the right degree of softness for easy hand bending. You can make every job a better job with Chase extra-soft copper refrigeration tube.

Chase 
BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass & Copper

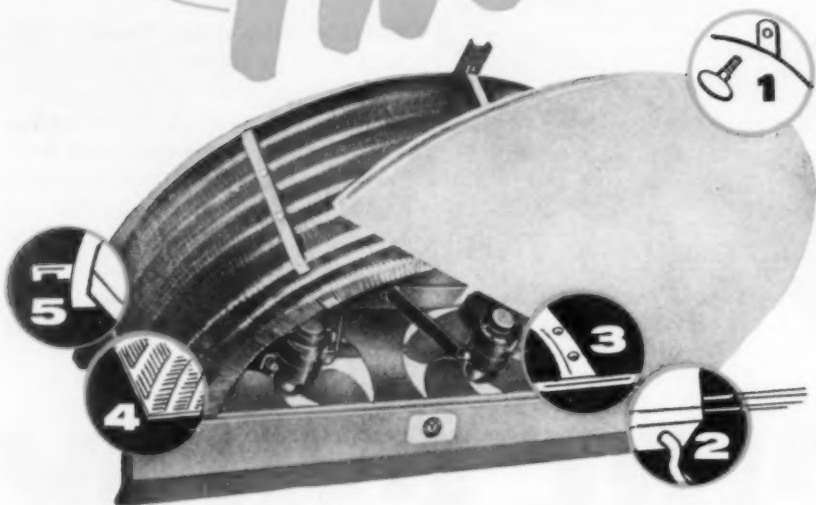
Albany†	Chicago	Detroit	Los Angeles	New Orleans	Rochester†
Atlanta	Cincinnati	Grand Rapids†	Louisville†	New York	St. Louis
Baltimore	Cleveland	Houston	Minneapolis	Philadelphia	San Francisco
Boston	Dallas	Indianapolis	Mississippi	Pittsburgh	Seattle
Charlotte†	Denver	Kansas City, Mo.	Newark	Providence	Waterbury

(†sales office only)

Circle No. 45 on Reader Service Card

& AIR CONDITIONING • SEPTEMBER, 1955

Twist...it's open!



SO SIMPLE TO INSTALL AND SERVICE TENNEY TW COOLERS

**no permanent
lines removed
for servicing**

- ① All parts are at your finger tips when you remove one thumb screw.
- ② You *never* need to remove the *permanent* refrigeration, power or water drain lines.
- ③ Machine bolts with lock nuts are used throughout construction... no sheet metal screws!
- ④ Extra large Facetized* fin coil assures maximum heat transfer.
- ⑤ Pre-determined spacing and slotted hangers for easy, exact installations... fans can't be blocked in installation.

Tenney's exclusive easy-to-service design saves time and effort! Modern, semi-circular shape insures maximum all-over air distribution...compact sizes add to usable work area. Load right up to unit because pan can be removed from any direction...double drain trough pitched toward connection and insulated... **controlled horizontal airflow eliminates uncomfortable direct drafts.**

Twin motors and fans give double protection...a single motor will maintain safe temperature...attractive covers have rust proof baked-on finishes...filters are available for applications requiring clean air circulation...female pipe thread adapts drain connection to *any* line... units skillfully engineered for long, dependable service.

*PATENTED

**There's a Tenney TW unit cooler
for every refrigeration job.**

**For complete information
write for Bulletin 103-54 TODAY!**



Tenney
ENGINEERING, INC.

1062 SPRINGFIELD ROAD, UNION, N. J.
Plants: Union, N. J. and Baltimore, Md.

Department CR-9

① 718

Engineers and Manufacturers of Refrigeration and Environmental Equipment

Circle No. 46 on Reader Service Card

140-TON MARKET . . .

Continued from page 52

runs were as long as 150', and runs of 100' were common.

The market's old ammonia system was dismantled piecemeal, while installation of the new equipment proceeded only one cooler at a time so as to create a minimum of interruption to the market's normal operations. Considerable difficulty was encountered in the removal of the old ammonia compressors, because of their bulk, which emphasized the importance of obtaining a firm salvage figure for the old equipment before preparing a final bid for any job of this type.

A total of 139 expansion valves were used on this job to provide individual refrigerant control at every evaporator. These valves were of the pressure limiting type designed to protect against high crankcase pressures on the hermetic units. All of these valves were connected with equalizer lines to eliminate the influence of pressure drop across the coils.

The original specifications for the storage cooler portion of the job called for open type compressors, but the professional engineers and architects on the job finally agreed that hermetic condensing units would be acceptable if these units could be adequately protected in some way against the danger of moisture or foreign matter of any kind reaching the crankcase and motor winding.

This potential hazard represented a very real problem because of the virtual impossibility, under practical job conditions, of keeping all foreign matter out of long runs of hard drawn copper tubing, and also because of the fact that melting ice in the coolers being put out of service resulted in excessive moisture conditions in the basement are at all times during the installation.

This problem was solved to the satisfaction of all concerned, however, by a carefully planned three-fold program: (1) installation of a ceramic core combination filter-drier in the suction line at the suction port of each condensing unit;

(2) installation of a supplementary drier before every liquid line expansion valve used on the coolers, in order to protect these valves just as the filter-driers protect the compressors; and (3) the bleeding of nitrogen into all refrigerant lines during the brazing operations in order to prevent oxidation on the inner surfaces of the tubing.

NEW ENVIRONMENTAL EQUIPMENT QUARTERLY

A new quarterly has been announced for furthering the interchange of information among users of environmental equipment. Sponsored by the Environmental Equipment Institute, the new quarterly will be directed by Dr. George D. Wilkinson, general manager of the Institute. The first issue, scheduled to appear in October, will contain technical and semi-technical articles, as well as departments devoted to news, recent product developments, and available literature pertinent to the field.

Serve yourself more profit!

...with *Hirsh Showline*
SELF-SERVICE SHELVING!



Mail the coupon today for FREE literature!

made by



the people who
know self-service best

When you contact food stores, you can close more and larger sales, make more money, and secure more new business leads by selling Hirsh Showline Self-Service Shelving in addition to refrigerated equipment. Showline gives you a competitive edge when you're bidding, adds to your reputation as a store fixture expert when the job is done, and increases your profits without increasing sales expense. Showline is known, preferred, and pre-sold through national trade advertising, and requires no special skill to specify or install.

- streamlined design • beautiful Hirshwood shelves
- push button shelf adjustability • comes complete
- super strong steel construction • low cost

Dealers! A few protected territories
are still available. Write for details!

S. A. HIRSH MFG. CO. CR-9
8051 Central Park Avenue, Skokie, Illinois
Gentlemen: Please send me complete information about
selling Hirsh Showline Shelving.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

ZONE _____

STATE _____

CONTRACTORS

NEWS • ACTIVITIES • PLANS

FTC Complaint Against Dairy Firms Broadened To Include All Transactions

THE Federal Trade Commission has approved the request of the Refrigeration and Air Conditioning Contractors Association that its original complaint of unfair trade practices against eight ice cream manufacturers be broadened to include all transactions on equipment, reports Ray Kromer, executive vice president of RACCA.

Earlier, the FTC had ruled that the original RACCA complaint applied only to so-called "switch" accounts — those transactions which took place at the time a frozen products account changed hands from one concern to another.

Upon examination of the public records of the FTC, Kromer said, it was found that of the cases that were cited in late 1954 and early 1955, only about 10% could be classified as "switch" accounts. On the basis of the original FTC restriction, it was difficult for members citing unfair trade practice complaints to determine whether or not the equipment was supplied on that basis.

"As a result of this investigation," Kromer said, "we felt the testimony would be restricted and the result of a cease and desist order on the original complaint would be of little value. The Trade Relations Committee and the Good and Welfare Committee of RACCA, therefore, requested an amendment and supplement to the original complaint."

Under the broadened complaint, evidence may now be presented of alleged unfair trade practices involving other than "switch" accounts — including the sale, lease, loan of such facilities as ice cream cabinets and other low temperature

equipment on terms with which regular refrigeration dealers cannot compete, and which cut them out of the opportunity to obtain this business on a fair and equitable basis.

One of the reasons cited to the FTC by RACCA as a basis for broadening its original complaint was the complaint issued recently by the Secretary of Agriculture against Swift & Co., in which he alleges essentially the same acts, practices and methods as mentioned in the RACCA action, but broadens the scope of the application to include not only those which occurred at the time of the switch but those which follow on so-called "switch" customers, and those involved with other retailers and handlers of frozen products.

A cease and desist order issued against Swift & Co., it was pointed

out, would make a similar order against the companies cited by RACCA mean little or nothing by comparison, unless its original complaint was made similarly inclusive.

Commenting on the amended FTC complaint, Kromer said:

"Give-away practices by ice cream manufacturers of refrigeration and air conditioning equipment has become cancerous to the good and welfare of the refrigeration and air conditioning industry. It has become detrimental to the growth of individual contractor organizations.

"An all-out campaign to cooperate with the FTC will be planned and consummated at an early date that evidence and cooperation in the field hearings will result in a strong case against these practices.

"The depth and breadth of the cease and desist order that will result from these field hearings, which will be conducted this fall, will be determined by the interest and cooperation provided by those who have experienced these unfair trade practices.

"While RACCA is leading the campaign for cooperation, the program is not restricted to RACCA members. There is no obligation to contractors who are not RACCA members."

Kromer emphasized that in supplying information on specific

A "SHOWCASE" INSTALLATION



PRIDE OF OWNERSHIP in its new air conditioning system is such that the Community Bank, of Burbank, Calif., has provided viewing windows to the equipment from the public corridor. The system uses a 25-ton U.S. Air Conditioning Co. packaged central station unit, containing built-in evaporative condenser, installed by Air Comfort Co., mechanical contractor.



Frequent door openings in this house-to-house delivery truck of Enterprise Ice Cream Company of Phoenix, Arizona, pose no problem, because 3 Kold-Hold Hold-Over plates keep ice cream at proper temperature. A 3/4 horsepower mounted compressor forms the highside unit. Body by Aluminum Body Corporation of Vernon, California.

Kold-Hold Hold-Over plates hold temperatures in the ice cream and milk compartments of this wholesale delivery truck built by Williamsen Body Works for Hi-Land Milk. The Hold-Over plates maintain proper temperatures in each compartment during the daily run. Two compressors are plugged in at night to recharge plates.

NOW! truck refrigeration that's tailored to your needs

Need "over-the-road" refrigeration? Kold-Trux Mobilmatic is your answer. Prefer make-and-break assemblies for recharging? Kold-Hold has them. Want a mounted compressor? You can get it from Kold-Hold. Have to hold low temperatures in your trucks despite scores of door openings daily? Kold-Hold Hold-Over plates are unexcelled for just that job. Need a combination of some of these systems, or would you be better served by Thin plates, Serpentine Quick-Action plates or Hydro-Pack Blowers? Kold-Hold Division of Tranter Manufacturing, inc., can give you any and all of these units in just the right combination to meet your individual requirements. Don't hogtie your overall operating efficiency by using an inflexible refrigeration system. Rely on Kold-Hold's know how and experience (the originators and oldest manufacturers of mechanical truck refrigeration) to tailor your truck refrigeration to your needs.

look to
KOLD-HOLD
for the latest
developments
in truck
refrigeration

Meat is kept in prime condition by Kold-Hold refrigeration units in Colesio's Farm-City trucks with bodies built by Aluminum Body Corporation of Vernon, California. Despite door openings, meat suffers no loss of bloom and requires no trimming for spoilage after delivery.

Combination of Kold-Trux Mobilmatic refrigeration and Kold-Hold Hold-Over plates is employed by St. Louis Dairy of St. Louis, Missouri, in several of its large wholesale milk trucks. While in motion, the truck generates refrigeration as needed through its Kold-Trux Mobilmatic system and the Hold-Over plates maintain the required temperatures the rest of the time.



7 ways to refrigerate your trucks and trailers are explained in the new Kold-Trux Catalog No. KT-155. Write for a copy today.

KOLD-HOLD®

DIVISION

TRANTER MANUFACTURING, inc.

503 E. Hazel Street

LANSING 4, MICHIGAN

Circle No. 49 on Reader Service Card

MAKE EXTRA PROFITS



with this new 88-page

KOCH CATALOG

Sell equipment and supplies to:

- MEAT PACKERS
- LOCKER PLANTS
- MEAT MARKETS
- INSTITUTIONS
- SAUSAGE MAKERS
- MEAT WHOLESALERS
- POULTRY PLANTS

This new illustrated Koch Catalog is your stock and show room. Koch free engineering service and "know how" will help you sell.

Write Today for Your Copy of 1956 Koch Catalog and Dealer Plan.

KOCH Supplies

2518 S. Holmes Ave. Kansas City 8, Mo.

deals, the only data needed is (1) the name of the account, (2) the name of the ice cream company furnishing the equipment, (3) the date it was installed and (4) the name of the individual or company furnishing the information.

Reports of such practices can be forwarded directly to the Federal Trade Commission, Washington 25, D. C. or the RACCA Trade Relations Committee, 10660 Carnegie Ave., Cleveland, Ohio.

FTC field hearings will probably be held this fall, with locations and dates to be announced later.

PROPOSED LAW WOULD "CERTIFY" CONTRACTORS

Enactment of a state law which would create a state examining board for the examination and certification of plumbing, heating and air conditioning contractors is being pushed by the Virginia Associated Plumbing and Heating Contractors.

A proposed bill, for which the association is now seeking support

among legislators, would in effect create an official class of "certified" contractors engaging in plumbing, heating and air conditioning. It would do this by requiring any contractor who called himself "certified" to secure a certificate, which the examining board would grant after the contractor passed an exam.

The bill would not prevent anyone from doing plumbing, heating and air conditioning work who complies with other existing laws or ordinances. But he could not then represent himself as a "certified" contractor.

The board would issue limited certificates of competency to contractors who are not qualified in all branches of plumbing, heating and air conditioning. If qualified, the contractor could be certified for all branches.

The proposed seven-man board would include a licensed professional engineer, a health doctor, a sanitary officer, an engineering professor in a state-supported college and three members of the plumbing, heating and air conditioning industry. The board would

NOW... INTRODUCING NEW UNIFLOW

ALL-ALUMINUM

WALK-IN COOLERS and WALK-IN FREEZERS



UNIFLOW FEATURES

- ★ Heavy gauge tempered aluminum—inside and out.
- ★ Concealed door hinges.
- ★ Semi-rigid fiberglass sealed to lining. Highest insulating value.
- ★ Standard size sections may be added any time.
- ★ Rounded corners offer extra beauty and streamlined appearance.
- ★ Tie-rod construction throughout; no cover plates to mar interior beauty.

Write for full information on the most complete line of walk-in coolers/freezers in the industry. We will be pleased to send you our Dealer "Extra Profits" Brochure. Address your request to THOMAS A. MARTIN, Sales Manager.



UNIFLOW MANUFACTURING COMPANY

EAST LAKE ROAD, ERIE, PENNSYLVANIA

have a paid executive secretary but members would be on a per diem basis. Cost of the board would be met by fees collected for giving examinations and renewing certificates.

In the language of the draft of the bill, the board would "give each applicant for a certificate of registration an examination designed to ascertain the technical and practical knowledge of the applicant concerning the analysis of plans and specifications, estimating costs, construction, fundamentals of design and installation, sanitation, fire hazards and related subjects."

The board would "have authority to issue a limited heating and air conditioning certificate to any applicant who establishes to the satisfaction of the board . . . that he is qualified to engage in the business of heating and/or air conditioning contracting by the installation, alteration and renovation of any one or more types of air conditioning but such limited certificate shall qualify the registrant to engage in the heating and air conditioning contracting business only to the extent and under the conditions recited in the certificate of registration."

Similarly the certificate of registration could be limited to plumbing contracting only.

Examination fees would be \$25 for applicants for certification in either plumbing or heating and air conditioning alone, and \$40 for those seeking qualification in both fields. If the applicant fails to pass the examination half of the examination fee would be returned. Renewal fees would be \$15 and \$25 annually.

RHEEM TELLS FULL LINE STORY TO HEATING MEN

Ahrens & McCarron, Inc., St. Louis distributor, was host to more than 200 contractor-dealers at a recent sales meeting of the Rheem Mfg. Co. At the meeting, dealers heard Rheem's story of expansion into full lines of heating-air-conditioning units and were presented three complete lines of package units for new construction plus a line of add-on vertical and horizontal air-conditioning units for modernizing applications.

AMBASSADOR HOTEL IS RACCA CONVENTION SITE

The eleventh annual convention of the Refrigeration and Air Conditioning Contractors Association will be held Nov. 26-29 at the Ambassador Hotel in Atlantic City.

Committee meetings will be held on Saturday, Nov. 26, and the directors' meeting on Sunday, Nov. 27.

The convention program, which will include a luncheon meeting in which nationally-known persons

will take part, will be held on Monday, Nov. 28. A short general meeting on Tuesday morning, Nov. 29, at which officers will be elected, will conclude RACCA business sessions.

Entertainment will feature a reception on the evening of Nov. 29 in the Embassy Room of the Ambassador Hotel, to be followed by a buffet dinner for members, prospective members and guests.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

No. 1 industry favorite



PARAGON 300-MB time switch is right for 90% of all refrigeration defrosting jobs

No. 1 favorite? You bet! From the day the Paragon 300-MB switch was introduced, it has been the standard of the refrigeration industry — and its uses are growing daily. It's standard for hot gas or electric heat defrosting . . . it automatically controls fans, solenoid valves, compressor motors and other equipment. Install it, set it, then forget it.

Insist on famous Paragon top-quality construction necessary for heavy-duty service — vital to ending call-backs — a must for guaranteeing profits. Order from your Refrigeration Equipment Wholesaler or write Dept. 1688 for bulletin.

- ✓ PROVIDES DEFROST CYCLES from 15 to 120 minutes — 1 to 8 operations per day.
- ✓ LONGER SWITCH LIFE assured by heavy-duty, industrial type motor.
- ✓ SHOCK-PROOF TERMINAL BLOCK means faster, safer installation.
- ✓ AMPLE CAPACITY — 30 amps, 120/240 volts, single or double pole. Offers flexibility not found in any other control.

Also write for complete facts on these famous Paragon timers

Commercial Defroster



Dehumidifier Timer



7-Day Calendar Dial Time Switch



Fan Timers



PARAGON ELECTRIC COMPANY
TWO RIVERS, WISCONSIN WORLD'S FOREMOST MANUFACTURER OF TIME CONTROLS

Circle No. 52 on Reader Service Card

-90° ROOMS . . .

Continued from page 55

The sub-zero room itself is enclosed in a 60 x 60 x 22' structure which contains all of the equipment necessary to carry out tests at loads up to 15 hp at -65 F. Signal intercommunication is provided by a loud speaker system with microphone and speakers located inside and outside the room.

Both a.c. and d.c. electric power is available in various combinations. Compressed air may be had from either the main source at 60 to 90 psi or the auxiliary source at 25 to 74 psi.

Five Instruments Used

There are five temperature-measuring instruments in use in this large "polar laboratory". Mounted on an instrument panel between two observation windows of the cold room, these instruments include: one 24-point indicating potentiometer pyrometer, -100 F to +1600 F; one 48-point indicating potentiometer pyrometer, -100 F to +1100 F; two 16-point recording potentiometer pyrometers, -100 F to +500 F; one 16-point recording potentiometer, -50 F to +1200 F.

These prove valuable in conducting tests on vehicular and engine generator equipment. During each test it is important to know how well the winterization kit under test is heating the critical components of the units. These tests are conducted at ambient temperatures of -70 F, -65 F, -40 F, -25 F and zero F. Below -70 F storage tests only are conducted. These tests are conducted at -80 F and -85 F.

Recorders Save Time

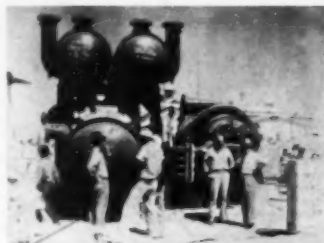
The recording-type instruments save considerable time, in that readings are recorded automatically every few minutes. This eliminates the need for men to take temperature data while a test is in progress. The indicating-type meters prove useful in checking temperatures at one's convenience.

A temperature recording controller serves to control the room operation temperature to within plus or minus 2 degrees at any temperature from -65 F to -85 F.

To conduct both military and commercial testing, Perfection has 18 engineers actively engaged in low temperature investigation, research and development. These men have experience in starting gasoline and diesel engines at -65 F, and in the problems associated with such projects, experience in cab and cargo heating, etc. Eight technicians with low-temperature experience stand by to lend their assistance, whenever needed.

This laboratory, built at a cost of \$250,000, is said to be the largest private installation in the United States devoted exclusively to winterization and in which temperatures as low as -90 F are possible.

During the 13 years that this company has been engaged in research in winterization, it has



REVERSING the usual procedure, a building is shown here being constructed around an 850-ton Worthington centrifugal refrigeration unit in Dhahran, Saudi Arabia. The new unit, which will be driven by an 1103-hp turbine manufactured at Worthington's Wellsville Works, will provide complete cooling facilities for buildings of Arabian American Oil Company.

worked with all branches of the military. Its research has contributed to improvements which have been made, during the past decade, in fuels, lubricants, batteries, tires, coolants, insulation materials and heating systems which must be used in extremely cold areas.

Tests such as those conducted in the Perfection cold laboratory have helped in providing answers to such questions as quick heat vs. standby heat, for starting at low temperatures; the advantages of combined personnel and power plant heating; the amount of heat required to warm a cold engine from -65 F to starting temperature; and methods of transmitting heat.

McMILLAN CO. TO MAKE HEAT PUMP LINE

Manufacture of packaged heat pump air conditioning units for home and commercial use has been started by W. W. McMillan & Co., Jacksonville, Fla. Standard units will range from 2 to 15-hp capacity and custom-built jobs up to 100 tons. An initial output of five package units per day is scheduled. Units, operating on the water-to-air principle, are specially equipped so that discharge water can be used for lawn sprinkling and feature copper coils six rows deep to intensify dehumidification rate and are housed in marine plywood instead of metal to reduce noise. Distribution will be through dealers and contractors throughout the U.S. and some foreign countries.

McMillan, a pioneer in the commercial development and design of heat pumps, has installed 400 units in Jacksonville alone since starting in the business in 1947.

ASRE ANNUAL MEETING DURING ARI SHOW

The 51st Annual Meeting of the American Society of Refrigerating Engineers will be held Dec. 1-3 at the Traymore Hotel in Atlantic City.

This meeting will be held in the same week as the ARI-sponsored 9th Exposition of the Air Conditioning and Refrigeration Industry, Nov. 28 to Dec. 1.

In addition to three Technical Conferences there will be a Packaged Air Conditioner Conference, a Domestic Refrigerator Engineering Conference and a Conference on the Effects of Environment on Domestic Animals and Plants.

Another major attraction will be the Research Exhibit which will present many of the most interesting research projects.

MEMPHIS FIRM NAMED

C. J. Gaskell Co., Inc., has been named sales representative for western Tennessee, southwestern Kentucky, northern Mississippi, northeastern Arkansas and southeastern Missouri by J. F. Pritchard and Co., manufacturer of cooling towers and dehydration units.

"Low-Cost Business Insurance

...that's what we call

American Vibration Eliminators"

UNITED REFRIGERATION SERVICE, INC.

COLUMBUS, OHIO



"WE PROTECT OUR CUSTOMERS against loss of business, merchandise and expensive charges of refrigerant—and protect our company's good name by using American Vibration Eliminators . . . the best answer we've seen to the vibration problem," says K. Milton Colwell, installation manager of United Refrigeration Service, Inc.

United Refrigeration's customers include three large supermarket chains and many restaurants, all of which are concerned with food preservation. For these customers, a cracked line on a refrigeration system means not only the loss of the refrigerant charge, but also a merchandise loss that could amount to thousands of dollars.

"Installing Vibration Eliminators is not merely a matter of convenience," Mr. Colwell continues, "it's insurance against tangible business losses. Providing this kind of insurance through the use of Vibration Eliminators is just good common sense."

United Refrigeration Service president, Oscar Reese, says, "The best way to indicate our satisfaction with Ameri-

can Vibration Eliminators is to point out that American is the *only* VE we use and specify. We've practically eliminated line fractures where they are used. American VE's are the best answer we've seen to the vibration problem!"

American Vibration Eliminators are listed by Underwriters' Laboratories, Inc., in sizes 1/4" OD through 3 3/8" OD. For descriptive folder write The American Brass Company, American Metal Hose Division, Waterbury 20, Conn. In Canada: The Canadian Fairbanks-Morse Company, Ltd.

K. Milton Colwell, installation manager of United Refrigeration Service, inspecting the American Vibration Eliminator on one of 12 refrigeration compressors recently installed in a supermarket.

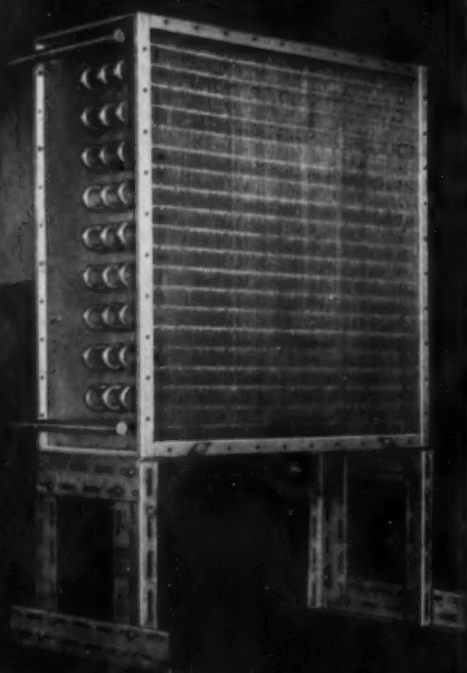
AD192

FOR AMERICAN VIBRATION ELIMINATORS SEE YOUR

ANACONDA[®] DISTRIBUTOR

PEERLESS Hi-F (High Efficiency) AIR COOLED CONDENSER

NO-WATER



Hi-F Air Cooled Condenser for mounting in stand on roof or remote outside location—also indoor installations with discharge duct to outside. Low Cost. ELIMINATES USE OF WATER. $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3, 5, $7\frac{1}{2}$ and 10 ton capacities.

Peerless is a name that dates back to the pioneer days of finned coil manufacture. With this background of experience it is no wonder that to "oldsters" in the industry and "newcomers" as well, the name Peerless stands for integrity.

The Hi-F Air Cooled Condenser is the culmination of years of know-how reflected in a design that assures maximum B.T.U. capacity season after season. In addition, the new and exclusive patent-applied-for Peerless manufacturing process is so efficient and rapid in operation that on time delivery is assured to any contractor even under emergency conditions.

Write for Bulletin No. NW 155 containing full engineering information on the Hi-F Air Cooled Condenser.

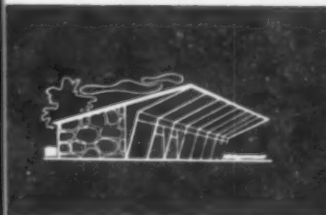
MANUFACTURERS, NOTE—Send us blue prints of your evaporator and condenser requirements for a Hi-F quotation. Please indicate delivery requirements.

PEERLESS of AMERICA, INC.

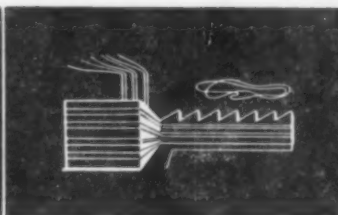
Dept. G, 5830 N. PULASKI ROAD, CHICAGO 30, ILL., U.S.A.

AIR CONDITIONING SECTION

COOLING • HEATING • CIRCULATION AND HUMIDITY CONTROL



COMMERCIAL



INDUSTRIAL



INSTITUTIONAL



RESIDENTIAL

TABLE OF CONTENTS

"Invisible" Air Conditioning for Supermarkets	71
New Air Conditioning Boosts Business for Old Theater	72
5-hp Condensing Unit — 40-Ton Cooling Capacity	73
Insurance Against Plant Shut-Down	74
Absorption and Steam Jet Air Conditioning Systems	76
Lubrication of Air Conditioning Machinery (Part 2)	80
Useful Air Conditioning Literature	85
What's New in Air Conditioning Equipment	89

HELP-



should you need it!

Here's how Chrysler Airtemp's "helping hand" policy can ease your way to profitable heating-cooling business

You'll find Airtemp experience in residential cooling and heating makes a dealer's job easier in lots of ways.

Equipment is designed for easier installation.

Training courses are brief, yet cover everything you need to know.

Merchandising helps are the result of years of experience.

You learn residential air conditioning from a company which knows and understands the business. Everything has been done to make it easier for you to sell and profit with Airtemp, but the "helping hand" is close by should you need it. For complete details, write to Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



CLOSET "SPACESAVER" Cooling coils can be ordered separately for quick installation on Airtemp furnaces (or most other makes) or Airtemp furnaces may be ordered with coils factory-mounted.



BASEMENT "SPACESAVER" 2, 3, 5 and 7½ H.P. capacities in waterless and water-cooled condensing units. New Airtemp dual furnace units provide extra-high air handling capacity for 5 and 7½ H.P. cooling and up to 240,000 BTU heating output.

*"the line
that pays"*



Airtemp

DIVISION OF CHRYSLER

HEATING • AIR CONDITIONING FOR HOMES, BUSINESS AND INDUSTRY

Circle No. 55 on Reader Service Card



CONCEALED behind the false wall section slanting up from the top of these display cases to the ceiling is the air conditioning ductwork which serves this food market's cooling system. This is just one of several tricks used by one contractor to achieve the same result.

"Invisible" AIR CONDITIONING *builds contractor's supermarket sales*

PPOINTING out to supermarket operators that large package units placed around the floor occupy a lot of valuable selling space, that extensive runs of exposed ducts overhead detract materially from the appearance of the store, and suggesting instead the installation of completely concealed central station air conditioning systems, has helped Everett Wellman, air conditioning contractor of Oklahoma City, land a lot of profitable air conditioning contracts.

Wellman has installed a dozen such "completely hidden" combination cooling and heating systems in new and remodeled Oklahoma City supermarkets within the past year, using each successfully completed job as a stepping stone to the next.

"We stress the fact that in these days of intense competition each supermarket must, of necessity, offer an atmosphere of air conditioned comfort for its shoppers," Wellman explains. "At the same time," he continues, "we point out to the operator that it isn't necessary for the store to sacrifice any profit-producing sales space or detract from the appearance of the store's decor with any exposed equipment or ducts."

This program of concealment has been artfully developed by Wellman in many ways. One technique used has been to locate the equipment in basement or back-of-the-store storage space and then to distribute the conditioned air through ducts concealed by drop ceilings constructed along either side of the store, and furred in with the same materials already used on the walls. In other cases, a complete new ceiling has been

installed across the whole width of the store, thus hiding from sight all electrical fixtures, conduit, water pipes, and other mechanical apparatus, as well as the air conditioning ducts.

In basementless stores, Wellman sometimes solves the problem of equipment location by building a lean-to against one of the outer walls, converting an unused closet to serve as a machinery room, or by utilizing a corner of the receiving or storage area.

A typical example of the Wellman air conditioning treatment is the new Fine's Food Store. In this 90 x 130' market, with 12,000 sq. ft. of selling space, Wellman arranged for a false ceiling dropped 2' below the original ceiling. The areaway thus provided not only offers concealment for all overhead pipes, conduits, and ducts, but likewise serves as a return for recirculated air.

In this particular market a 38 x 21' basement was available in which Wellman installed a 25-ton compressor. Chilled water from this compressor is pumped to an air handling unit which provides for both summer cooling and winter heating with a double bank of refrigeration coils and a steam coil, the latter being supplied from the market's 25-hp boiler.

Ductwork above the false ceiling consists of a 70 x 18" main supply duct some 90' in length, from which stem three 34 x 12" branch ducts, each of which services two ceiling outlets. These outlets are centered between long, narrow fluorescent light strips recessed in the store's acoustical plastic ceiling.

NEW AIR CONDITIONING

boosts business for old theater

In this engineered system, ingenious handling of the balcony problem, plus use of existing air distribution facilities, kept both equipment costs and operating expense low

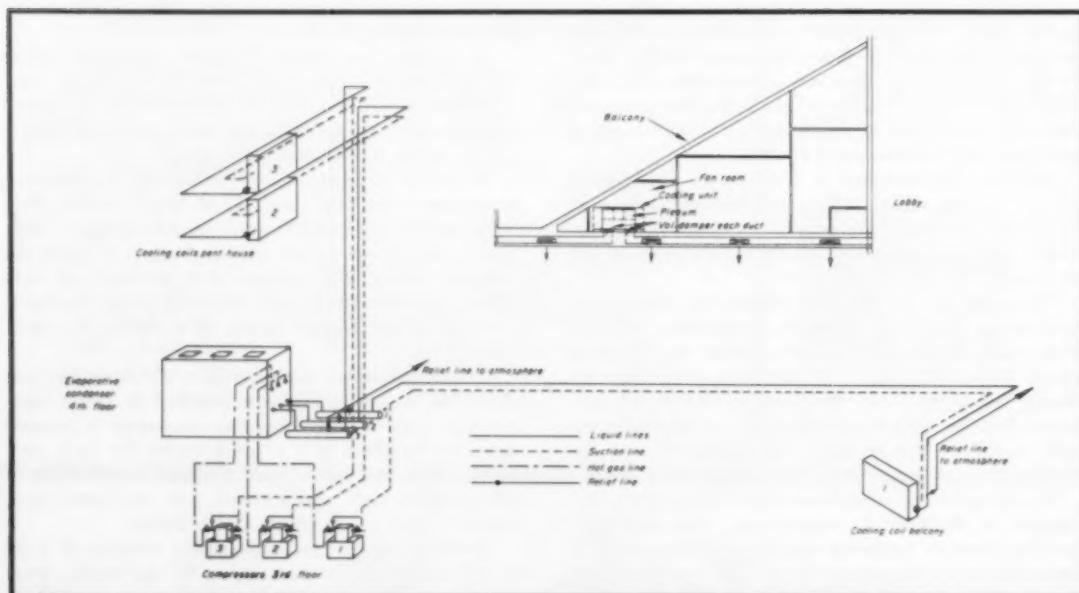
MAXIMUM economy, both in original cost and operating expense, was achieved in the installation of a 100-ton air conditioning system in the Cinderella Theater, Detroit, Mich. The installation was made by Ackerman Refrigeration Co. The Detroit office of J. George Fischer & Sons, Inc., wholesaler of refrigeration

equipment and supplies, aided in the design of the system and furnished the equipment.

The Cinderella was an old 1800-seat theater which had experienced a steadily declining patronage until United Detroit Theaters, which operates this motion picture house, decided to completely remodel and redecorate it. Air conditioning, it

was decided, would be essential to any such modernization program. Now, thanks to this general renovation program—and in no small measure to the air conditioning itself—the theater's patronage has grown steadily.

A number of factors contributed to the economy of this installation. In the first place, it was decided



SPLITTING UP this 100-hp theater installation into three separate circuits, none larger than 40-hp in size, assured maximum flexibility of operation and minimum maintenance costs. The

balcony system (inset) was specially designed to provide heating as well as cooling.

that the best way to handle the 100-ton load would be with three separate condensing units—two of 30-hp capacity and one of 40-hp—instead of with a single 100-ton machine. The units selected were Brunner air-cooled models.

A 100-ton Acme evaporative condenser with a 3-circuited coil was mounted in an old dressing room area on the floor above the condensing unit location.

Penthouse Was Utilized

Two Bush direct expansion cooling coils were installed in the penthouse in which the theater's main ventilating fan was located. Placed at the intake side of the fan, and hooked up to the two 30-hp condensing units, these coils provide cooled air for distribution through the main fan system, which has a capacity of 22,000 cfm. This cooled air is delivered into the theater through two diffusers mounted in the ceiling of the main auditorium area.

A separate duct takes off from the main supply duct just in front of the diffusers and delivers cooled air to a regular sidewall outlet located in the face of an exposed beam running across the width of the theater in the ceiling over the balcony. Air from this outlet is discharged toward the rear of the balcony for the express purpose of handling this hard-to-cool area.

Separate Circuits Planned

In actual operation, each of the 30-hp compressors discharges into a separate circuit of the evaporative condenser, each with its own receiver. Then the refrigerant cycle continues up to the cooling coils and back down to the compressors.

The 40-hp condensing unit is connected to a 12,000-cfm Bush air handling unit located in an unused space within the balcony projection. Attached to the center of the under side of the balcony, and running the full depth of the balcony extension, a false beam was constructed to serve as a duct for

Continued on page 107



ICE STORAGE COOLING provides air conditioned comfort for parishioners of Westminister Presbyterian Church, St. Louis, during even the longest sermons.

5-hp CONDENSING UNIT — 40-TON COOLING CAPACITY

ONE of the largest and most beautiful churches in St. Louis — Westminister Presbyterian Church on Delmar Boulevard — is completely air conditioned by a unique "ice storage" type refrigeration system designed and installed by Noland & Co., St. Louis air conditioning dealer.

This cooling system, employing a Worthington air handling unit, 5-hp packaged condensing unit, and 3-hp "Monobloc" pump, operates on single phase power and allows the use of minimum horsepower to supply 40 tons of refrigeration.

Throughout each week the condensing unit performs its work by building up ice on 14 ice storage plates installed in a 10-gauge iron tank designed by Worthington. The plates are on 6½" centers. On Sunday morning the pump circulates water between the ice tank and the air handling unit, and air passing over the chilled water coil in the air unit is distributed to the church sanctuary by means of a main supply trunk in the crawl space below the sanctuary floor. This crawl space, in which the air handling unit is installed, actually amounts to an enormous plenum.

Ice capacity is maintained throughout the week for use in the dining or meeting rooms if required.

Branch ducts from the main supply trunk extend to a total of twenty 36" high sheet metal boxes located in wall niches. Painted to match the existing sandstone, these boxes terminate 36" above the sanctuary floor in a 45 degree sloping top containing a double deflection supply grille. The system requires no return air ductwork but, instead, utilizes a series of 600 8" floor openings, which were already present, to return air to the crawl space. Thus, without spoiling the atmosphere of the church, the system creates a cool area up to 12 feet above the floor.

In today's windowless factories, where air conditioning is a necessity, the application of package units can provide . . .

INSURANCE

against plant

SHUT-DOWN

THE new plant of International Latex Corp. at Manchester, Ga., like many another modern manufacturing establishment, was designed to be air conditioned. Without air conditioning, it would be virtually impossible for this factory, planned for the efficient production of certain articles of women's wear, to operate—particularly in the summer months.

In the first place, the plant is windowless and of one-floor construction. Its flat roof is continually exposed to the burning glare of the Georgia sun. At full capacity the plant will be staffed by some 400 women workers, and this occupancy load will be augmented by the heat load from the 400 ½-hp sewing machines that these women will operate. Additional machine load will total 90 hp. Because windowless construction allows no entry of daylight into the plant, the artificial lighting load will average about 2½ watts per square foot of floor area.

It was with all these factors in mind that Engineering Contractors, Inc., Chrysler Airtemp dealer in At-

lanta, Ga., set about designing an air conditioning system for the plant that would not only provide the necessary amount of cooling but also would offer maximum insurance against the possibility of having to shut down the plant as a result of air conditioning equipment failure. The obvious answer seemed to lie in a system composed of packaged units, even though the complete plant cooling load totaled 138 tons.

The new plant building encompasses both production and storage space, plus an offset in which are located the business offices, an employee cafeteria, and toilet rooms. Both cooling and heating were provided for the entire plant, with the exception of the storage area, in which no cooling was required.

15 Packages in Production Area

Actual production area of the plant measures 270 x 131'. This area was handled by the installation of eight 15-ton Airtemp packaged air conditioners, all ranged along one wall of the shop. These eight units actually were grouped in pairs, side by side, with the four pairs spaced at even intervals along the one side wall.

From the side of each unit, a separate outside air intake duct, 10 x 12" in size and equipped with an adjustable damper, leads up through the roof of the building. Each of these outside air ducts is topped by a gooseneck, facing away from the nearest cooling tower, and a bird screen. Each conditioner is equipped with its own thermostat, mounted at the return air side of the unit.

From the top of each unit in each pair, a 17 x 48" duct leads the conditioned air into a common plenum, from which it passes into a single duct which extends, at ceiling height, across the full width of the shop.

Ducts Provide Even Air Distribution

These ducts step down in stages from 54 x 24" to 24 x 18" as they progress across the shop. Eight 24 x 10" supply grilles are spaced along each side of each duct, thus providing even air distribution through the entire production area. A manually operated volume control damper was installed back of each supply grille to assist in proper balancing of the system.

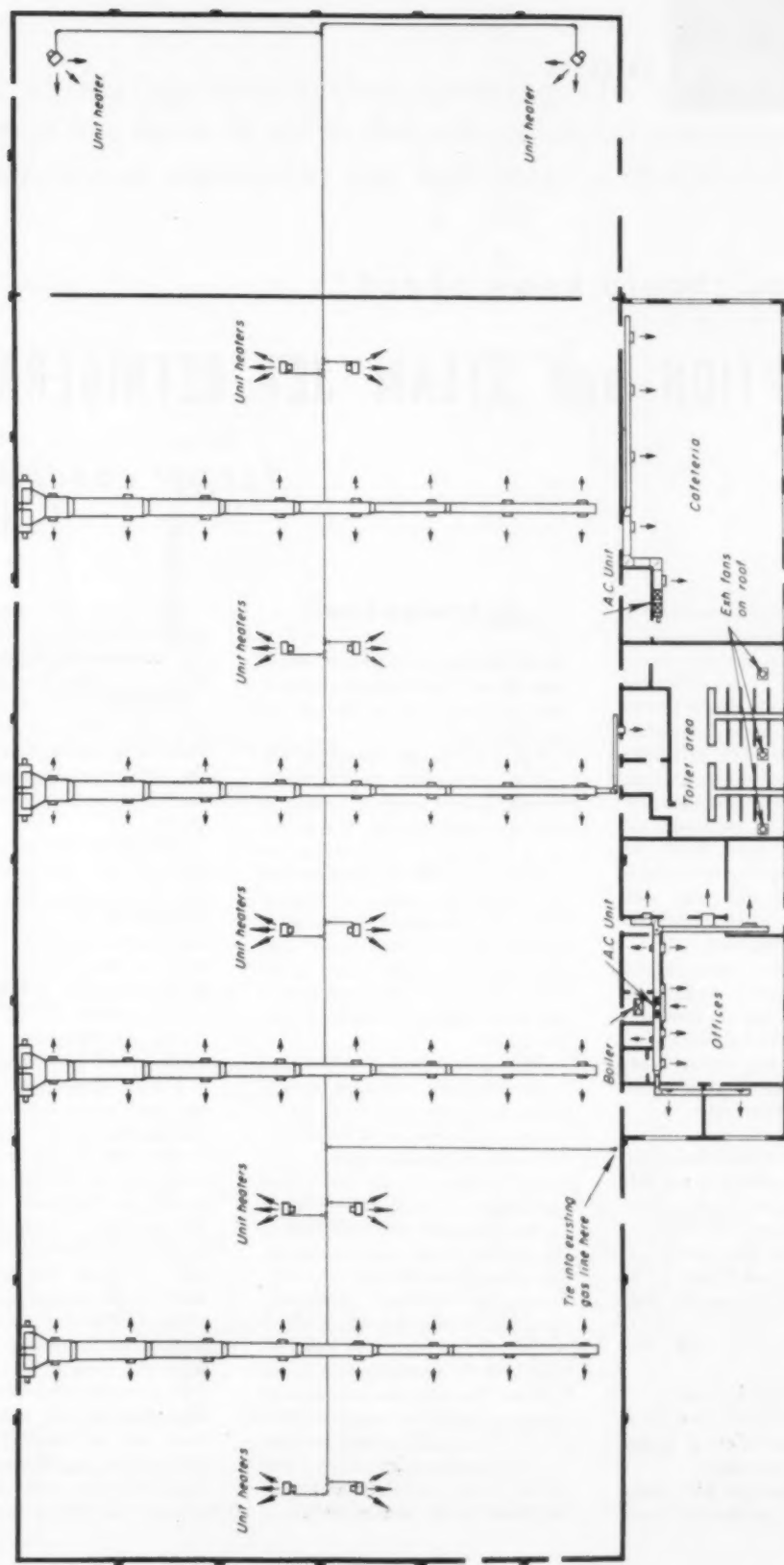
Prime reason for the location of the air conditioning units in this manner was the fact that the roof girders run cross-wise the building, and it was one of the conditions of the installation that no ductwork extend below the bottom level of these girders. It was obviously impossible, therefore, to run any ductwork length-wise in the shop area.

Locating the air conditioning units along a center line, with ductwork running out toward each side of the shop, was out of the question because of interference with production operations. Locating them along both side walls would have meant double runs of water and electrical lines.

Heating for the shop area, on the other hand, was provided for by 10 gas-fired unit heaters fed from a single gas line run down the center line of the build-

Continued on page 107

Failure of Cooling Equipment Will Never Close this Windowless Plant



FLEXIBILITY AS WELL AS DEPENDABILITY are inherent characteristics of this industrial air conditioning system which involves the use of 10 separate packaged units, ranging from 8 to 15 tons in capacity, tied into the requisite ductwork to provide the desired air distribution. Whenever the plant is not operating at full capacity, the cooling capacity of the units can be reduced to match the load.

ing system may be zoned to cover just those areas which are in use. Also, barring power failure, this system ensures that there will always be sufficient cooling available to keep the windowless building usable.

What you should know about

ABSORPTION and STEAM JET REFRIGERATION

for air conditioning

THE application of mechanical cooling to air conditioning is so well established that it is possible to overlook progress which has been made in development of equipment with non-mechanical refrigeration cycles. The principles of absorption and steam jet cooling are well known and such systems have been in successful operation for many years. Newly designed equipment is now available in more wanted sizes and with many objectionable features of older systems eliminated.

Among the advantages claimed for non-mechanical equipment, when installed under favorable conditions, are the following:

1. Fewer moving parts: None at all in some systems, resulting in less wear and maintenance.
2. Less noise.
3. Less weight and freedom from vibration, making it possible to install on upper floors without special foundations.
4. May require less space.
5. Can utilize waste heat.
6. Heating boiler can be used all year.
7. Lower operating cost often possible.
8. First cost may be lower.
9. Safety, because of few moving parts and operation at or below atmospheric pressure.

All these advantages will rarely be attained in a particular instal-

by Edward Dowis

lation but relative merits of all systems should be compared in selecting equipment for a new or remodeling job.

Fig. 1 shows an absorption system available, with modifications, in sizes from 2 tons air cooling to a 25 ton water chiller. The refrigerant is water. It is contained in a solution of lithium bromide salt with which the system is charged. The cycle illustrated is that of a Servel all-year conditioner and uses steam from the boiler as the heat source. Another type uses a gas flame applied directly to the generator.

Heat drives water vapor and some solution, through vertical tubes, to a separator from which water vapor rises to a condenser. The solution flows by gravity and pressure difference, through a heat exchanger, to an absorber. Vapor in the condenser gives up heat to the cooling water and condenses. The water flows through a restriction to the evaporator. Here pressure is reduced to a point at which water will vaporize at approximately 40 F, absorbing heat in the process. The very low pressure required to vaporize water at this temperature is maintained by affinity of the cooled solution for water vapor, which it absorbs as fast as vaporized in the cooling coil.

Fig. 2 is a flow diagram of an all year conditioner using this cycle. A steam diverter valve supplies steam to either the heating coil and humidifier or to the cooling and dehumidifying system as desired. Condensate formed around the refrigeration generator is returned to the boiler by a pump as shown.

Absorption cooling systems are available for operation on either gas, oil or steam. Selection should be made on the basis of economy and dependability. Condensing water is required, which may be from city mains, a well or stream or recirculated through a cooling tower. Consumption ratings are made at 75° inlet temperature.

Table 1 shows approximate fuel and water consumption per ton for absorption systems. Gas is given in Btu per hr. because of wide variations in Btu content of gas in different locations. To get cubic feet per hour, divide Btu per hr. by Btu per cubic foot of gas to be used. Natural gas usually runs about 1,000 Btu per cu. ft. as supplied. Dollar cost per hour of operation can be readily determined from unit costs of fuel and water.

It is noteworthy that output of absorption coolers can be modulated over a considerable range without loss in efficiency by throttling the fuel or steam supply. This reduces cost during hours of light

Systems of this type have obvious advantages for some applications. Here are a few facts to aid in the evaluation, selection, installation, and operation of absorption and high vacuum equipment.

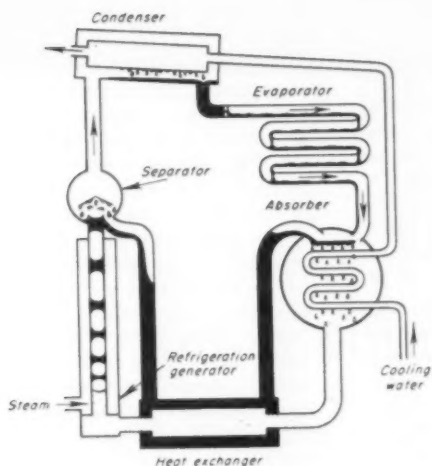


FIG. 1—TYPICAL ABSORPTION CYCLE

(Copyright, 1955, by Servel, Inc., and reproduced by special permission.)

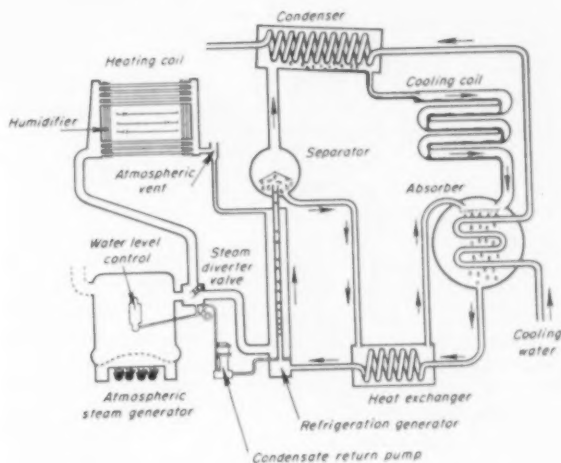


FIG. 2—ALL-YEAR ABSORPTION CYCLE

(Copyright, 1955, by Servel, Inc., and reproduced by special permission.)

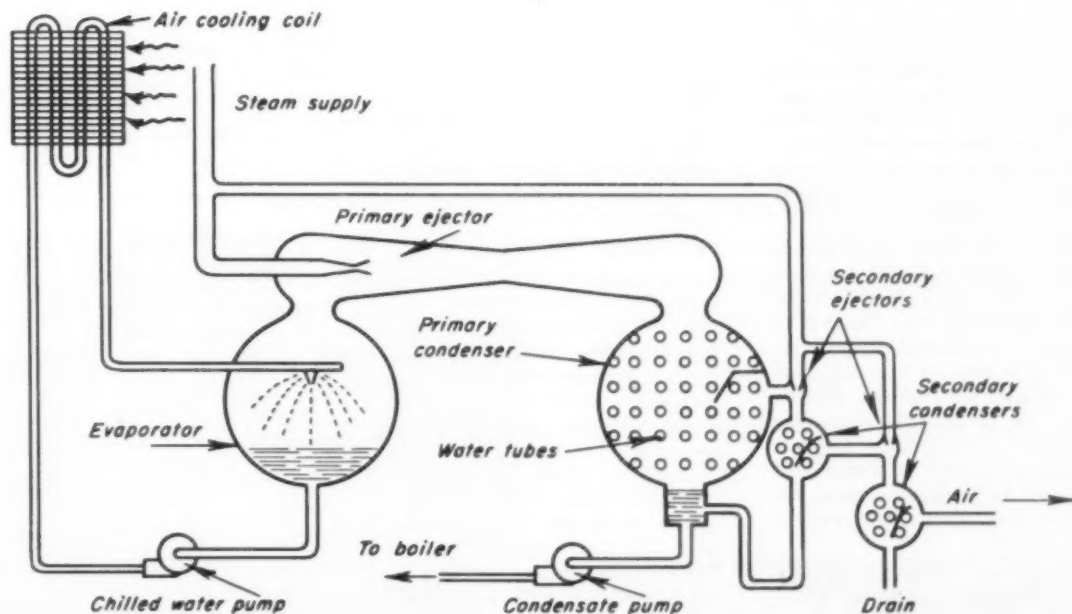


FIG. 3—STEAM JET COOLING SYSTEM

TABLE 1
APPROXIMATE FUEL AND WATER
CONSUMPTION PER TON OF
ABSORPTION COOLING

	MINIMUM	MAXIMUM
GAS (Btu/hr)	21,000	27,500
OIL (#2 grade) (gph)	.16	.2
STEAM (lb/hr)	18.5	20.5
WATER (gph)	135	150

load. Better performance is achieved when capacity is about equal to load.

When water supply is below 75 F, less will be required than indicated in Table 1. It is customary to install a thermostatic water valve in the supply line, controlled by outlet water temperature, which is normally about 103 F. This will pass only enough water to handle the cooling load.

It is quite possible, and often desirable, to provide chilled water for air conditioning by means of a high vacuum, induced by a steam jet, without the use of absorbing materials. Steam jet chillers resemble absorption types in that they are light in weight, free from vibration and refrigeration is produced without mechanical moving parts. A water level control, condensate pump and chilled water pump are necessary for economical operation but are accessories rather than primary and require minimum maintenance.

Steam jet chillers are made in sizes as small as 5 tons but have their widest application in larger sizes (above 15 tons). There is no expensive refrigerant requiring replacement because of leakage and the safety factor is high because there are no toxic or flammable materials. Considerable progress has been reported, in development of a window conditioner using the jet principle, with electricity as the heat source.

Conditions indicating desirability of steam jet cooling are a supply of steam or facilities for producing it economically and suffi-

cient condenser water or means of cooling recirculated water. Steam cycles require considerably more condensing water than mechanical ones since both vapor from cooling and steam for compression must be condensed. Steam pressure and condensing water temperature are not critical. Pressure as low as 5 pounds may be used and condensing water up to 90 F may be satisfactory.

Fig. 3 shows the operation of a typical jet system. Steam is applied to a primary ejector designed to induce a very low absolute pressure (a high vacuum of about 29.6"). Water will vaporize at about 50 F at this pressure, taking up the required heat from water remaining in the chiller and reducing its temperature to 50 F. The chilled water is sent through an air cooling coil as in any wet system, returning to the evaporator at about 55 F, where more water is vaporized to reduce it again to 50 F. Only about 11 lbs. of water per hour per ton of cooling will be evaporated, which can be replaced through a simple float valve control.

Steam Is Compressed

Steam from the ejector, along with vapor and air from the evaporator, flow to a booster condenser where they are compressed from about .17 psi absolute in their evaporator to about 1 psi absolute (29.6" to 28" vacuum). The steam and vapor will condense at 100 F at this pressure. Condensate is returned to the boiler by a condensate pump as shown.

Air is removed from the evaporator, along with water vapor, and must be raised to atmospheric pressure to be expelled. That is the purpose of the two secondary ejectors and condensers. The air, along with some vapor, is drawn from the primary or booster condenser by an ejector and pressure raised one stage in the first secondary condenser. The vapor is condensed and returned to the booster. A second ejector draws air to a second stage condenser, raises the pressure to atmospheric for venting and condenses and

drains condensate from the ejectors.

A minimum steam pressure of 30 or more pounds gauge is required to operate the secondary ejectors, though a lower pressure may be adequate for the primary. Where steam is available only at low pressure, mechanical vacuum pumps may be used to evacuate the final or both secondary condensers.

Operation of condensing equipment under high vacuum may be unfamiliar to refrigeration men accustomed to the mechanical cycle. This process is very familiar to operators of steam engines and boilers, where condensation of steam under vacuum is standard practice. The surface condenser is not unlike the shell and tube condenser used for mechanical refrigeration. Water flows through the tubes, making two or four passes usually, steam condenses outside the tubes, falling to the bottom of the shell. The shell must be insulated.

A jet type condenser is occasionally used, in which condensing water is mixed with vapor to be condensed. Since both condensate and condensing water must be removed under vacuum of about 28", it is customary to elevate the jet condenser a minimum of 34' and let the discharge pipe drain into a well. The weight of water in the discharge pipe is sufficient to

Continued on page 84

TABLE 2
APPROXIMATE STEAM
REQUIREMENT
FOR JET VACUUM COOLING
Lbs. per hr. per ton

PSI GAUGE	Lbs./hr.
10	32.1
20	29.4
30	28.3
40	27.3
50	26.2
60	25
70	24
80	23
90	22.5
100	22



BELOW: Among the many features of the lobby are the clerestory illumination, the unobtrusive air diffusers, and the bas relief mural carved in wood by Buck Winn, Jr.

Architects: Prinz and Brooks
General Contractor: Burgher Construction Co.



The New Look In

- Architecture
- Air Conditioning

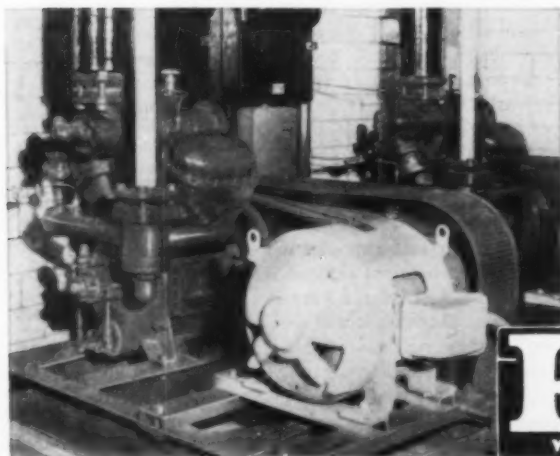
The Oak Cliff Savings and Loan Association started eight years ago with \$35,000—now has resources of \$30,000,000. Its new building at Bishop and Center Streets is one of the finest in Dallas, and was awarded first honors for non-residential construction in 1954 by the Texas Society of Architects.

The entire structure, including the lobby, conference and accounting

areas, community room and lounge, is air conditioned with two Frick "ECLIPSE" compressors. Each refrigerating machine is driven by a motor of 40 horsepower.

When you want the ultimate in quality and dependability . . . whether for air conditioning, refrigeration, ice making or quick freezing . . . specify FRICK.

Get quotations now on the equipment you need: Branch Offices and Distributors in principal cities, the world over.



DEPENDABLE REFRIGERATION SINCE 1882
FRICK Co.
WAYNESBORO, PENNA. U.S.A.

PART TWO (Conclusion)

LUBRICATING OIL REQUIREMENTS

Type of Oil

LUBRICATING oils commonly used in air conditioning compressors today are stable, well refined light colored or "pale oils". In the past, these oils were rather generally prepared from naphthenic base crudes, in order to utilize their inherent low pour points and freedom from wax. Such oils have a long history of satisfactory service in refrigeration and air conditioning units of widely varied design. As refining techniques and refrigeration designs progressed, it became feasible and in certain instances desirable to utilize pale oils prepared from paraffin base crudes. Today both types of lubricants are available to the manufacturers of air conditioning equipment, and the choice between them is based on experience and ex-

LUBRICATION *of Air*

WHAT •

WHERE •

WHY •

WHEN •

HOW •

by G. B. Hamilton

Research and Technical Dept.
The Texas Co.

haustive performance tests in equipment it is intended to market.

Mechanical designs are usually being developed several years ahead of the time at which the final machine is marketed. A series of "life tests" on combinations of components, including various types, brands and viscosities of lubricating oils, can therefore be run under normal or overloaded conditions for periods up to two years. The units under test will be checked at regular intervals for efficiency of operation, and will be completely disassembled at the end of the test for thorough examination of all components. The performance of the lubricating oil will be rated by its changes in physical characteristics and by observations of wax, gum, varnish, sludge, wear, corrosion and copper plating within the system.

Viscosity

During the eighty years of mechanical refrigeration experience and thirty years of air conditioning experience, certain principles of proper lubrication have been established just as established features and principles of mechanical refrigeration were developed. With regard to viscosity, it was recognized that the lubricating oil must be fluid or thin enough to move readily from a sump or reservoir to the point at which its lubricating effect is desired. At that point it must be viscous or thick enough to hold the two metal surfaces

apart and, in many instances, to hold in the pressure of the compressed refrigerant gas.

Generally speaking, the oil chosen should have the lowest viscosity which will give the required sealing-in of the refrigerant used over the range of temperatures, pressures and refrigerant dilutions anticipated. To facilitate the design engineer's consideration and choice, a number of lubricant suppliers make their refrigeration quality lubricating oil available in nominal viscosities of 80, 100, 150, 200, 300 and 500 Saybolt Universal Seconds at 100 F, thus completely bracketing the range which might normally be required.

Viscosity Index

Aside from the nominal viscosity of a lubricating oil at a specified temperature such as 100 F, the tendency of the oil to reduce viscosity with increasing temperature often bears consideration. This tendency is measured on an arbitrary scale known as "Viscosity Index", in which oils whose viscosities change rapidly with temperature are assigned low V.I. numbers and those whose viscosities change slowly are assigned high V.I. numbers. This feature becomes of importance if an oil is to function at several different, widely separated

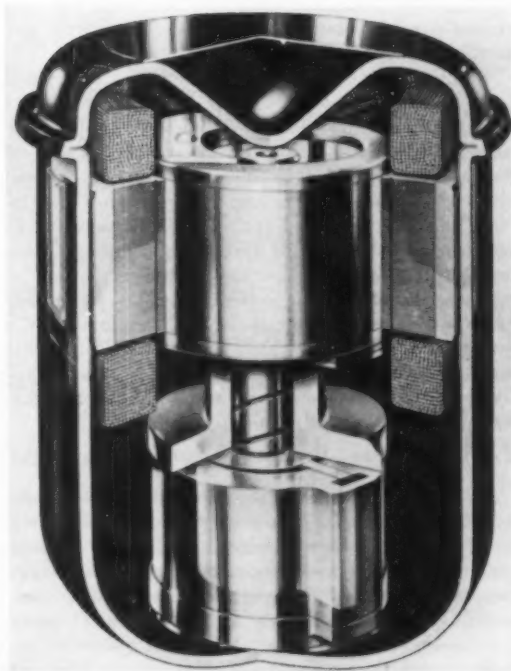
temperatures, which is not ordinarily true of air conditioning compressor equipment.

In the range of Viscosity Indices encountered on commercially available refrigeration compressor oils, viz. 25-100 V.I., an oil properly chosen for its viscosity under the normal operating conditions of temperature and refrigerant dilution will not ordinarily either thin to a dangerous degree in a slightly overheated bearing or thicken to a point where it will not be properly delivered to the point of requirement in a cold compressor. While high V.I. may appear desirable to even out the viscosity differences at various points, this effect must be balanced against the possible detriments of the higher pour test and wax content usually associated with high V.I. oils. These features are discussed further below.

Volatility

While the average air conditioning compressor will function at maximum temperatures considerably below 200 F, there may be installations of the booster type which exceed 300 F on the refrigerant discharge side of the compressor. Under high temperature conditions, the relative vaporizing tendencies of petroleum

Conditioning Machinery



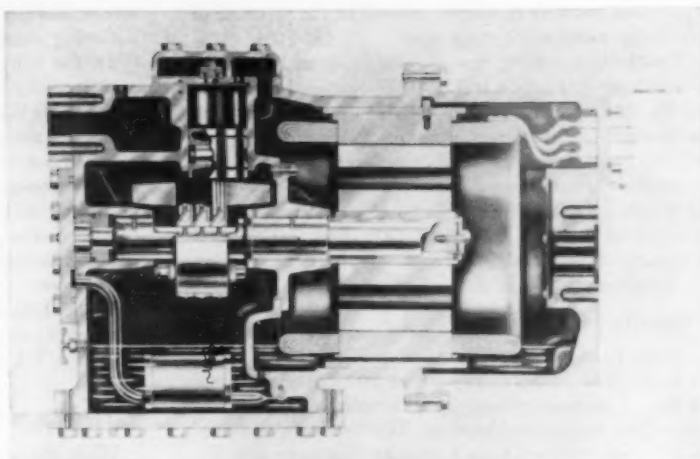
lubricating oils must be considered. The oil used must not vaporize excessively at the temperatures and pressures involved, lest it carry over too rapidly, overload and pass through the separator, and give objectionable accumulations in the cold side.

The desired quality is imparted to refrigeration grade compressor lubricants by use of due precautions in their manufacture to assure that materials are not included which would be volatile at the temperatures to be encountered. This quality has additional significance in the modern vacuum dehydration step applied to many hermetic units during their manufacture. The units often contain a portion or all of their lubricant charge at the time the vacuum and heat are applied for dehydrating purposes, and any volatilization of the lubricant may both interfere with the drying operation and put undue load on the vacuum pump. A common pressure for vacuum dehydration is 100 microns absolute pressure, at which the commercially available refrigeration oils will not vaporize appreciably below 200 F.

Continued on page 82

PERMANENTLY LUBRICATED and hermetically sealed in this "Meter-Miser" rotary compressor. This unit is used in pairs in $\frac{1}{4}$ and 1-hp room conditioners, and singly in $\frac{1}{3}$ and $\frac{1}{2}$ -hp units. (Courtesy of Frigidaire Div., General Motors Corp.)

CROSS SECTION of a semi-hermetic compressor used in commercial packaged units and residential air conditioners. A rotary vane type pump on end of crankshaft delivers filtered oil from the sump to various parts shown. (Courtesy of Worthington Corp.)



Foaming

Foaming of the lubricating oil in the crankcase may occur, particularly in reciprocating units where the refrigerant vapors at suction pressure enter the compressor through the crankcase. The degree of foaming can be controlled to a certain extent by the manufacturer of the lubricant, through his oil refining process or the inclusion of anti-foam agents which impart a foam killing effect when present in the "trace" amounts of only a few parts per million.

A high degree of foaming is generally considered objectionable, since it will contribute to oil carryover past the piston or piston rings and may interfere with pump action in a forced feed lubrication system. Some designers of refrigeration compressors consider a moderate amount of foaming beneficial in that it may contribute to the effectiveness of splash lubrication or muffle some of the noise of moving parts. Design of the compressor will thus effect the degree of oil foaming which can be tolerated or is desired.

Pour and Wax

Simple fluids such as water, alcohol and glycerine have fixed and accurately reproducible freezing points at which a complete change from the liquid to the solid phase takes place. Lubricating oils, however, are complex mixtures of hydrocarbons of various freezing points, which behave like solutions and frequently deposit some portion of their constituents before the whole mixture becomes solidified. Wax is particularly susceptible to such deposition, but all hydrocarbons tend to thicken as temperature is reduced and will eventually become solids.

These effects contribute to the increasing viscosity of lubricating oil as its temperature is reduced and, eventually, the oil ceases to flow at all, due to the restriction imposed either by separated solid materials or extreme viscosity of the liquids present. Lubricating oils from paraffin and mixed base crudes tend to cease flow due to the interlocking network of wax crystals that form as temperature is reduced; oils from rela-

tively wax free naphthene base crudes generally cease to flow due to the viscosity thickening action.

The pour test is the measure of the lowest temperature at which a petroleum oil will pour or flow when it is chilled, without disturbance, under definitely prescribed conditions. The proviso in regard to disturbance is especially important. Extensive research has indicated that any agitation or stirring of the oil while cooling causes it to solidify at a lower temperature than when held absolutely motionless. This is explained by the assumption that movement of the oil disturbs the fine network which is forming. When undisturbed, these microscopic paraffin wax particles grow and interlock more easily into the formation that supports itself and facilitates solidification. The pour test procedure should, therefore, provide for absolutely motionless cooling during the time involved.

In lubrication of compressors which may be exposed to low temperatures at start-up, pour characteristics can affect the initial selection of lubrication oils. These must have pour tests below the lowest expected start-up temperature to enable handling by the conventional types of oil circulating systems. The oil must also remain comparatively fluid at the lowest temperatures to which it may be subjected during the operation. These temperatures will be encountered in the expansion or refrigerating side of the system, after the refrigerant has passed the expansion valve or capillary tube. If the refrigerant is carrying a high percentage of oil at this point, any wax congealment might lead to faulty operation of the expansion device or restricted heat transfer through the coated evaporator surfaces.

Refrigerant "Floc" Test

Refrigerant dissolved in the lubricating oil will have the effect of reducing the pour point, thus widening the temperature range at which the oil may be used without difficulties from complete congealment. However, the presence of dissolved refrigerant will not necessarily completely prevent the separation of waxy components, particularly at the coldest points in the system where the proportion of refrigerant is high but

the refrigerant is evaporating rapidly and increasing in concentration of oil. A Wax Precipitation Test is therefore used to measure tendency to precipitate wax from the solution of oil in refrigerant.

The test is usually made on a 10% mixture of oil in "Freon-12", but it could be made on whatever percentage concentration and oil-soluble refrigerant the refrigeration or air conditioning system is designed to use. The temperature of the refrigerant-oil mixture is gradually reduced until a first faint wax haze is observed. This is recorded as the Wax Haze Temperature.

The temperature of the mixture then is further reduced until the tiny wax crystals forming the haze gather together into observable flocs. This temperature is recorded as the Floc Point. The tiny haze-forming crystals are not considered harmful; and it is not until the crystals begin to flocculate into clumps that undesirable waxy deposits and clogging can occur in the refrigerant system. The floccing feature is probably of less importance in air-conditioning installations than in low temperature refrigeration systems, but the design of the individual installation will indicate the degree of consideration which must be given to the pour and floc characteristics of the compressor lubricating oil.

It should be pointed out that the amount of oil circulated with the refrigerant in a well designed and operating air conditioning system will usually not exceed 1 or 2% of the refrigerant circulated. An oil circulation as high as 10% should be exceedingly rare. Running the Wax Precipitation Test on a 10% mixture of oil in refrigerant thus provides a good margin of safety for translating test results to the anticipated operation of the unit.

Moisture

Moisture in refrigeration and air conditioning systems freezes to ice at whatever point it first reaches a temperature below 32 F, causing stoppage of the expansion control device, plugging of refrigerant tubing, or reduced evaporative efficiency in the cooling coils.

The system as a whole represents a rather complex mixture of materials—hydrocarbons, refrigerant, metals, packing and sealing materials, electrical insulation—which under the impetus of intimate contact and temperature enter into chemical reactions with each other. Any moisture present will make the reactions easier and more numerous, giving corrosion which may damage any number of parts of the system and render it inoperative.

It is therefore common practice for refrigeration equipment to be thoroughly freed of moisture, before being placed in operation, by application of vacuum or heat, or both, or the equipment may be thoroughly flushed out with dry refrigerant gas. The manufacturers of lubricating oils and refrigerants

IMPORTANCE of the refrigeration wholesaler to the entire industry is highlighted in an attractive 2-color folder which has been produced by A-P Controls Corp. and is being sent to every refrigeration product manufacturer.

A complete listing of A-P wholesalers also is being mailed out to more than 18,000 product designers in all metalworking plants in conjunction with a new solenoid valve bulletin the company is releasing.

A-P feels that a greater realization of the wholesaler's importance will do much to make product designers more aware of the consideration of a replacement supply source when specifying component parts for the original equipment market.

For the convenience of servicemen, A-P also is identifying wholesalers at their locations with a bright new decal.

contribute their share to the dryness of the equipment by manufacturing their products to extremely low limits of moisture content. Oils are commonly prepared to contain less than 20 parts per million of water, and refrigerants less than 5 parts per million. The products often are packaged in small sealed packages to preserve their moisture-free qualities until the exact time of use.

The Dielectric Strength Test based on resistance offered to passage of electric current has been

devised to assure that refrigeration grade lubricating oils are satisfactorily free of moisture. The procedure involves subjecting the oil to high voltage in a standardized test cup fitted with fixed gap electrodes of copper or brass. Resistance of oils to a stress of at least 25,000 volts per millimeter was found to be an indication that they were sufficiently dry for refrigeration purposes. The satisfactory maintenance of the 25,000 volt electrical potential simultaneously assures the absence of solid impurities which would also be objectionable in the lubricant.

Stability

Refrigeration grade compressor oils are expected to give years of service, and this can be achieved only if they are manufactured to be extremely stable toward heat and the materials with which they come in contact. The required stability is imparted by very careful selection of the crude sources utilized, the fraction of crude selected, and the refining processes applied during manufacture. Additional stability may be imparted by including additives, but this practice is not yet widespread in refrigeration usage.

Due to increases in compression capacity, limited space and limited cooling water, the average operating temperature of air conditioning compressors has steadily risen. Higher operating temperatures tend all the more to break down lubricating oils and may lead to formation of varnish and gum films. The chemical reactions occurring are complex and not fully known, even though considerable research on them has been conducted.

They are not simply oxidation of portions of the oil, inasmuch as oxygen and oxidizing conditions are rather completely excluded from the systems. It is likely, rather, that chain reactions of various oil and refrigerant components occur and are catalyzed or entered into by the moisture, metal surfaces, metallic wear particles, sealing compounds, etc. that are present. In sealed hermetic units, the reactions may be compounded further by electrical components

present or by stray electrical currents.

One particularly disturbing series of reactions encountered in various types of machines tends to dissolve copper parts and plate the metal out on other metal surfaces, such as bearings, where change in the nature and thicknesses of surfaces can quickly lead to damaging wear. This "copper plating" phenomenon has been given much study without resulting in a complete explanation or solution. It has been found, however, that a completely dry system largely eliminates copper plating difficulties. This is an additional reason for providing extremely dry lubricants and refrigerants.

CARE IN HANDLING LUBRICATING OILS

Petroleum oils which have been actively dehydrated will tend to reabsorb a certain amount of moisture when exposed to the air for any length of time. They should, therefore, be carefully stored and the containers opened only when it is necessary to use the oil. If any oil remains unused, the containers should be sealed as tightly as possible. Before usage, it is advisable to keep containers at room temperature for at least 24 hours. This will equalize temperature and reduce the possibility of moisture condensation in the oil. Where oil is handled in bulk quantities, as at the plants manufacturing air conditioning equipment, facilities are usually provided to vacuum dehydrate and blotter press the oil just before use to assure that it is properly moisture-free and trash-free.

AUXILIARY EQUIPMENT

As in the heating unit, the cooling unit may include pumps for transferring a secondary fluid medium, circulating or ventilating fans or shutters, and external electric motors, all requiring oiling or greasing with general purpose lubricants in accordance with their manufacturers' recommendations. Some large units may be powered by steam pumps or turbines, requiring the proper grade of steam cylinder or turbine oil.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

ABSORPTION SYSTEMS . . .

Continued from page 78

maintain the 28" vacuum. Low level jet condensers are rarely used because of the expense of pumping a large volume of water under high vacuum. For air conditioning, shell and tube surface condensers are used almost exclusively.

Steam and water are the major cost items in operation of steam jet chillers. Quantities required are determined partly by the condensing temperature. High temperature condensing requires more steam but less water. The condensing temperature should be selected, which will result in minimum combined cost for steam and water. Low pressure steam requires more pounds per hour per ton than high pressure, up to 100 lbs. Above this pressure, the decrease in quantity is negligible. Any consider-

able decrease below 100 lbs. will result in important increase in consumption. Table 2 shows approximate consumption of steam per hour per ton chilled water at 50° and condensing temperature 100 F.

Condensing water will be the amount required to remove 1100 Btu from each pound of steam supplied plus 12,000 Btu for each ton of cooling. Water will remove 1 Btu per lb for each degree rise in temperature or 8.33 Btu per gallon. Temperature rise will be the difference between condensing temperature minus 5 F and initial water temperature. This is because condensers are designed to operate at a 5 F temperature difference.

To illustrate, find steam and water consumption for a 100-ton chiller, maintaining 50 F water, steam pressure 50 psi gauge, condensing temperature 100°, initial water temperature 75 F:

Steam (lbs per hr.)	=	150 × 26.2	=	3930 (Table 2)
Btu/hr. condensing steam	=	3930 × 1100	=	4,323,000
Btu/hr. cooling	=	150 × 12,000	=	1,800,000
Total Btu/hr. to be removed				6,123,000
Temperature rise of water:				100 — 5 = 95 — 75 = 20°
Btu per gallon				8.33 × 20 = 166.6
Gal per hr.	=	6,123,000 ÷ 166.6	=	36,752
Gal per minute	=	36,752 ÷ 60	=	612

Both steam and water consumption, in this example, are relatively high because of low steam pressure. Manufacturers' ratings should be consulted for consumption at other pressures and condensing temperatures.

COMBINE CALIFORNIA REFRIGERATION FIRMS

Refrigerating & Power Specialties Co., San Francisco refrigeration supplies wholesaler, has purchased the assets and name of California Refrigerator Co., of San Francisco, Oakland, Sacramento and Fresno, according to an announcement by A. F. Tudury, president of RAPSCO.

As a result of the purchase RAPSCO will now have outlets in nine cities. The company already has establishments in San Francisco, Portland, Stockton, Seattle and Tacoma. The entire California Refrigerator Co. organization will be integrated with that of RAPSCO and present store managers of California Refrigerator Co. will be retained in their positions.

Refrigerating & Power Specialties Co. was founded in 1926 by its president, A. F. Tudury. N. W. Edwards is vice president and general manager. California Refrigerator Co. was founded in 1932 by C. F. Pratt and later was purchased by G. S. Robinson who has operated it successfully up to the present time. Robinson is reestablishing himself in the logging and plywood business.



USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

A NEW TECHNICAL MANUAL on "Thermopane" insulating glass, revised to include data on glazing air conditioned buildings, has been prepared by Libbey-Owens-Ford Co. In the 28-page publication, the new section outlines a formula for calculating solar heat gain from each of four directions, and compares various glass materials. Included also are two pages devoted to building orientation and methods of shading exposed windows. The manual is "Form TP-25."

Circle No. 91 on Reader Service Card

CONSUMER'S GUIDE to air conditioning economy is the topic of a 6-page, three-color folder issued by the Marley Co. The literature explains with text and pictures the advantages of water cooled systems and shows three models of cooling towers.

Circle No. 92 on Reader Service Card

WIDER APPLICATION of ice banks in areas where the load varies is discussed in a new 14 page catalog published by King Zeero Co. Titled "Sweetwater Units for Air Conditioning", the new catalog gives a complete description of the construction, operation and specifications of the King Zeero line.

Circle No. 93 on Reader Service Card

GUIDE CHARTS dealing with the properties and uses of "3M" adhesives for insulation materials, and for insulating coatings, are contained in a 4-page "A & C insulation folder" issued by Minnesota Mining & Mfg. Co. Information includes temperature limits, application methods, drying times, solvents used, colors, and estimated coverage.

Circle No. 94 on Reader Service Card

SEVEN DIFFERENT MODELS of Rex Airate ventilating fans are featured in a new 14-page, three-color catalog issued by Air Controls, Inc. The catalog gives complete specifications including tables for calculating number and size of fans needed for given space as well as time required for complete change of air in various types of installations.

Circle No. 95 on Reader Service Card

A NEW LINE of central-station, cabinet-type air conditioning units is presented in a new 20 page catalog by American Blower Corp. The illustrated catalog (Bulletin No. 8127) describes three types of air conditioning units for industrial and commercial applications. Ten pages are devoted to tables and graphs showing the exact type of unit which will meet individual job requirements. A variety of unit arrangements are illustrated with line drawings and size specification tables.

Circle No. 96 on Reader Service Card

FULL INFORMATION on its complete line of hot water heating specialties and residence type external storage and tankless heaters is contained in a new catalog of Taco Heaters, Inc. The catalog (No. I-99) covers several new products which are included for the first time.

Circle No. 97 on Reader Service Card

(More Air Conditioning Literature on page 86)

& AIR CONDITIONING • SEPTEMBER, 1955



EL SIROCCO
Deerfield Beach, Florida

#77 MOTEL
Beatrice, Nebraska

MOTEL DE VILLE
New Orleans, Louisiana

EL RANCHO MOTEL
El Paso, Texas

TALLY HO MOTEL
Valley Forge, Pennsylvania

The Swing's to Spotaire!

COX'S MOTEL
Fairfield, Illinois

BEDFORD MOTEL & INN
Bedford, Mass.

PYRAMIDS MOTEL
Las Vegas, Nevada

MEADOW ACRES MOTEL
Topeka, Kansas

drayer-hanson refrigerated zone-controlled AIR CONDITIONING

Wilbur Clark's Desert Inn, at fabulous Las Vegas, sparked the trend to D-H Spotaire air conditioning. The Sands, The Thunderbird, The Flamingo, and others, soon followed suit. Now, hotel and motel owners and managers the country over—large and small, in "new" construction and "old"—acclaim the safe-n-saving advantages of cooling and heating... ventilating and filtering... the Spotaire system way. Spotaire gives all-out performance.

Its operation is service free. No expensive ductwork! No need to condition areas not in use! No compressor noises nearby—other mechanical equipment remotely placed! Just that breeze-easy Spotaire way of letting each guest be his own weatherman—and to his exact specification, by a mere flick of the switch.



SPOTAIRE HRC SERIES
Compact blower and coil unit for concealed, overhead, installation in each individual room.



SPOTAIRE YWC SERIES
Handsome console models, or recessed types, for individual-room installation.



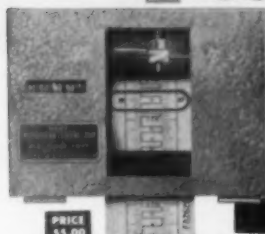
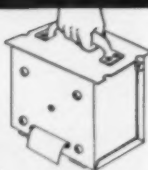
A colorful brochure is
yours, free. Write,

drayer-hanson
INCORPORATED

3301 MEDFORD STREET, LOS ANGELES 63, CALIFORNIA
(SUBSIDIARY OF NATIONAL U.S. RADIATOR CORP.)

Circle No. 57 on Reader Service Card

NEW PORTABLE Recorder + totalizer



PRICE
\$5.00

**AUTOMATIC
on-the-spot
check of AIR
CONDITIONING
or HEATING
systems**

No more wasting time in checking the operation of any installation—be it a new air conditioning unit, oil burner or heating plant. The PORTABLE Recorder + Totalizer furnishes all the data you could get with a stopwatch, pad, pencil and adding machine. It makes a chronological record on tape of the time and length of every "on", every "off" period, and it also gives you a total of the "on" time on the totalizer. The Recorder + Totalizer operates electrically—in any plant large or small, old or new. Use the portable model from job to job... or better yet make it a part of every installation... it's so low priced. You can satisfy yourself... and give assurance to your customers that the job is right.

write for literature PRT

the **HEAT-TIMER Corporation**

RECORDER DIVISION 657 Broadway • New York 12, N.Y.

Mfrs. of HEAT-TIMER electronic weather controls, HEAT Recorder-Totalizer, Ventroler, Thermocalor, Main Line Quick-Vent Valve, Motorized Valves, Smoke-Eye Smoke Alarm, Fire-Chief Fire Alarm, H-T Burner Alarm.

BIG BUYS IN SMALL PRECISION FLOAT CONTROL VALVES

For controlling water in humidifying units, pan fillers, air conditioning equipment, evaporative coolers, and air washers. No. 51 and 52 Valves accurately maintain water lines as low as 1" deep. Float adjustable. See your jobber or write us.

No. 51



Only 5 1/4" long overall. Non-corrosive metals throughout. Easy to install by drilling one hole. Capacity 1/2 gal. per minute at 50 lbs. pressure.

No. 52



8" long overall. Same features as No. 51 Valve, except larger capacity—1 gal. per minute at 50 lbs. pressure.



Manufacturers of Heating and Air Conditioning Specialties



MAID-O'-MIST, Inc.
3217 NORTH PULASKI ROAD, CHICAGO 41, ILLINOIS



Circle No. 59 on Reader Service Card

AIR CONDITIONING LITERATURE . . .

Continued from page 85

ATTIC TO BASEMENT air conditioning for as little as 18¢ a day is described in a catalog sheet of Ultrasonics Corp. The literature gives dimensions, capacities and complete specifications of its new Temtron, model 20-H2 central residential unit.

Circle No. 98 on Reader Service Card

LOW PRESSURE REFRIGERATING UNITS for air conditioning, marine service, water cooling, food storage and processing are described and illustrated in a 14-page, three-color catalog of Frick Co. Complete data including specifications, applications and dimensional drawings are furnished.

Circle No. 99 on Reader Service Card

VERSATILITY of air conditioning packaged units is shown in a new 2-color illustrated bulletin of Worthington Corp. (C-1100-B64). Among the applications in various fields featured in the bulletin are: savings and loan associations, restaurants, optical manufacturers, soda shops and institutions.

Circle No. 100 on Reader Service Card

5 NEW BULLETINS on the use of flexible hose in dust and fume control, air conditioning and materials handling are now available from the Flexaust Co. The illustrated bulletins (Nos. 40 through 44) besides containing general information, describe accessories, installation, application, friction loss and give other useful data.

Circle No. 101 on Reader Service Card

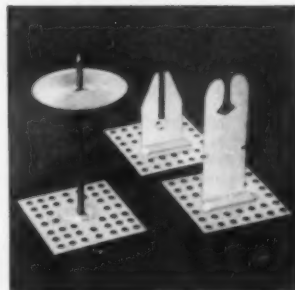
(Turn to page 96 for more Useful Literature)

APPLY INSULATION—

**QUICKLY
ECONOMICALLY
EASILY**

with

STIC-KLIP



Stic-Klips permanently bind almost any insulating substance to masonry, wood, metal—flat, corrugated, curved, unusual-shaped. Eliminate drilling, puncturing metal. This modern method is used for heating, ventilating, air conditioning, processing equipment, cold storage, acoustical, marine installations.

Write for illustrated booklet on any of these applications

Stic-Klip® MANUFACTURING COMPANY, INC.
Box 83-A, Cambridge, Mass.

Circle No. 60 on Reader Service Card

Circle No. 61 on Reader Service Card



A new high in **HIGH VELOCITY**



The photograph above shows main banking floor of the First National Bank in Dallas. Note how straight line All-Air High Velocity units blend perfectly into the architectural design. See next page for detail.

The All-Air High Velocity system also provides draftless comfort throughout the bank as well as in the second floor executive offices (shown at left). See next page for detail.

Architect: George L. Dahl

Consulting Engineer:
Landauer, Guerrero & Shafer

Contractor:
C. Wallace Plumbing Co.

Main banking floor



Sketch of photograph on preceding page shows the installation of twenty-four Anemostat 36-inch HPSP-100 High Velocity units, each supplying 200 cfm. A total of 4800 cfm is delivered to the main banking floor.

These pages illustrate the use of the Anemostat All-Air High Velocity distribution system in a modern air-conditioned bank. Anemostat High Velocity units are also being used throughout the country in many other applications such as hospitals, schools, department stores, office buildings and plants. • Here are some of the important architectural and engineering advan-

tages of the Anemostat All-Air High Velocity distribution system. It can be used with smaller than conventional ducts. It can be installed faster and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.

For latest data on Anemostat All-Air High Velocity units, write on your business letterhead for new Selection Manual 50.



ANEMOSTAT®

DRAFTLESS Aspirating AIR DIFFUSERS

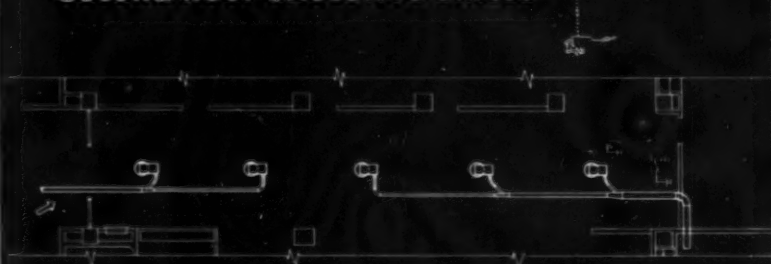
ANEMOSTAT CORPORATION OF AMERICA

10 East 39th Street, New York 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

*"No Air Conditioning System
Is Better Than Its Air Distribution"*

Second floor executive offices



Diagrammatic ceiling view of offices on preceding page. This shows the installation of five Anemostat HPCM-1-100 High Velocity units, each supplying 125 cfm.

WHAT'S NEW

In Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For more New Products turn to page 100)

Room Air Conditioner

Product: "Roomette" air conditioner that need not be located anywhere near a window.

Manufacturer: Carrier Corp., Syracuse, N.Y.

Features: Air for refrigerant condensing comes through bottom instead of back of unit and can be drawn from a well-ventilated base-



ment or crawl space or through a short duct to an outside wall. All controls and grilles are located on front panel. The $\frac{3}{4}$ -hp model, designed for use with standard 115-volt household circuits, measures 27" high, 15" wide and 28" deep. It has a flat marproof top and is available in driftwood beige color.

Circle No. 161 on Reader Service Card

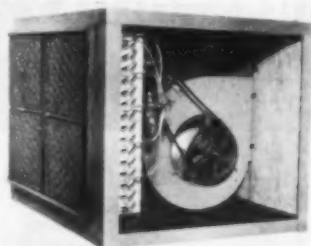
Combination Cooling System

Product: Model 8ACCU remote air-cooled condensing unit coupled with 8LSU low-side air handling unit.

Manufacturer: Typhoon Air Conditioning Co., Inc., Brooklyn.

Features: Combination unit requires no floor space; condensing unit may be placed outside air conditioned area and air handling unit can be suspended from wall or ceiling. Condensing unit has oversized parts and an unusually large amount of evaporator surface. Cabinet is formed of heavy-gauge furniture steel, spot-welded at critical points.

Air handling unit is useful for cooling where hot water or steam heating systems already exist, and is suitable for air conditioning areas



without any air handling facilities. It will also serve as a heating unit through the addition of a heating coil. The combined units are available in matched capacities of 2, 3, 5, 8 and 10 tons.

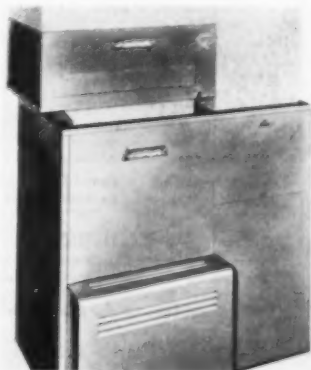
Circle No. 162 on Reader Service Card

Horizontal Coil Unit

Product: Type 912 coil unit for installations where space is at a premium.

Manufacturer: Mueller Climate Control, Milwaukee.

Features: Cooling coil casing can be built into heating unit duct-



work, with coil and condensing unit installed later with no ductwork alterations necessary. Can be installed above highboy or lowboy fur-

naces. Unit has a built-in by-pass damper for controlling excess humidity. Available in 2 and 3 hp sizes and measures 12 $\frac{5}{8}$ " high, 29 $\frac{3}{4}$ " wide and 20 $\frac{3}{4}$ " deep.

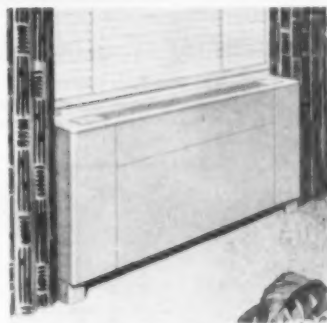
Circle No. 163 on Reader Service Card

Compact Conditioners

Product: New line of room conditioners for multi-room structures.

Manufacturer: American Blower Corp., Detroit.

Features: Product has new type fan, designed on the lineflow principle, which extends full length of discharge outlet and permits straight through air movement from one side of fan to the other. The compact unit has high gravity convactor capacity and either throw-away or cleanable type filters can be inserted or removed without removing the enclosure. Mechanical interlock insures closing of outside air damper when motor switch is off. Insulated with vinyl-covered fiberglass the unit



is available in lengths of 18", 27", 39", 48" and 54" with rated air deliveries ranging from 200 to 600 cfm. Flexible design of unit permits horizontal ceiling or vertical floor installation.

Circle No. 164 on Reader Service Card

Central Air Conditioner

Product: Model B350A Vornado air-cooled central residential air conditioner.

Manufacturer: O. A. Sutton Corp., Wichita, Kan.



Features: Designed to cool a three-bedroom home, the 3 $\frac{1}{2}$ -hp unit (B350A) has a cooling capacity of 36,000 Btu and is adjustable to 17,000 Btu for economical operation. Unit is equipped with two in-

dividually operated 1-3/4-hp hermetically sealed compressors and two squirrel-cage blowers. Motor and compressors are mounted on rubber to reduce noise and vibration. Unit supplements 2-hp residential conditioner announced earlier.

Circle No. 165 on Reader Service Card

Improved Convectors

Product: New convector models with improved features.

Manufacturer: Brown Products Co., Forest Hills, N.Y.

Features: Redesigned heating elements utilize bronze headers, and

improved cabinet design is said to cut down installation time. A formed, lateral steel brace welded to the inside of front cover engages a strut on the cabinet to hold front panel in place. A baffle across the back of cabinet adds structural strength and deflects additional heat through the louvers. Available in both free-standing and recessed models in 6" and 8" depths.

Circle No. 166 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALE**



For clean, dry, trouble-free systems, install

DFN **DRIERS—FILTERS
STRAINERS**

Most complete line on the market! Every type, size, need.

DEMOUNTABLE (Cartridge Type) DRIERS

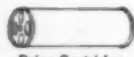
1 to 100 Tons Capacity

Heavy forged brass tongue and groove flanges.
Easily serviced—only 6 bronze cap screws

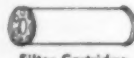


Straight thru and Angle Types

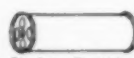
Use same shell 3 ways
by interchanging car-
tridges according to
the needs of the sys-
tem, as shown.



Drier Cartridge

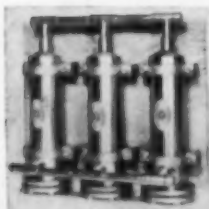


Filter Cartridge



Strainer Cartridge

See DFN Selection Chart



NEW!

Manifold
Angle Shells
—mounted on
wood panel
—ready to install.

FACTORY-SEALED FILTER-DRIERS



Factory charged and sealed for permanent installation. Choice of desiccants, PERMAGRAN—Silica Gel—Activated Alumina.

PERMACLEAN FILTERS



Designed for heavy-duty service. Exclusive Permaclean filtering element provides large, effective surface, plus depth filtration to take out sludge, flux and particles down to 1 micron. Factory-sealed and demountable types.

FULL LINE OF STRAINERS



Factory-sealed
Demountable—
Angle Type

Pencil Type
Demountable—
"Y" Type

DFN ACCESSORIES

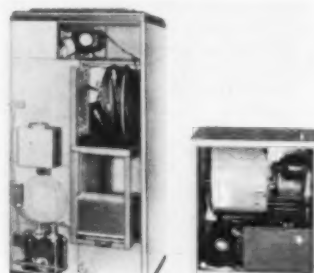
Charging hose and couplers • Hose
for Pull-out Compartments • Vibration
Absorbers • Water Regulating Valves
• Water Bubblers • Water Glass Fillers

Year 'Round Conditioner

Product: Moncrief "Counter-flow" packaged air conditioner for homes without basements.

Manufacturer: Henry Furnace Co., Medina, Ohio.

Features: Cooling coil and heating element are contained in same cabinet. Vertically mounted cooling coil prevents recirculation of condensate moisture and assures drainage of condensate water away from coil. Provides 2-ton cooling capacity with either air cooled, remote or water-cooled refrigerant circuit. Heating is supplied by 100,000-Btu input gas burner or 0.75-gallon, gun-type oil burner, which provides 84,000-Btu output rating. When unit is



equipped with water-cooled refrigerant circuit, entire system is mounted on a frame which slides into furnace cabinet. When equipped for air condensing cooling, only cooling coil is installed in furnace cabinet. Compressors, condensers and condenser blower are installed in separate steel cabinet which can be located in out-of-the-way place. Unit measures 73" high, 36 1/2" wide, and 26" deep. Air discharge opening is 14 1/2" by 20".

Circle No. 167 on Reader Service Card

Starting Accessory

Product: Device for 3 and 5 hp air conditioning units reduces electrical load 50% in starting.

Manufacturer: General Electric Co., Schenectady, N.Y.

Features: Unit saves costs of heavier lines and transformers required for full-voltage starting. It is especially useful after temporary power failures, holding down current demand long enough for other equipment on same lines to get started first.

Circle No. 168 on Reader Service Card

New Central System

Product: Heating-cooling conditioner with individual room control.

Manufacturer: Warren Webster & Co., Camden, N.J.

Features: Motor and fan are rubber-mounted, coil is made of aluminum fins on copper tubing and



GET OUR NEW CATALOG! Ask your wholesaler—or write us.

THE McINTIRE COMPANY • Livingston 11, N.J.

DRIERS • FILTERS • STRAINERS

Circle No. 62 on Reader Service Card

double directional louvers are provided. Basement installation utilizes a chiller and boiler connected in parallel and fitted with shut-off valves for seasonal change-over.



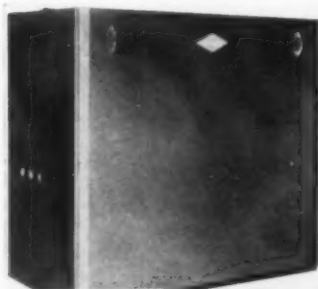
Cabinet measures 14" wide, 20" high and 6 $\frac{3}{4}$ " deep and fits within standard stud spacing of 16-inch centers. Choice of recessed, semi-recessed, or free-standing cabinets available. Spring-hinged door swings down to provide access to 3-speed fan switch. Circle No. 169 on Reader Service Card

"Add-On" Conditioners

Product: Model NU residential air conditioners designed for use with any type of warm air furnace.

Manufacturer: Union Asbestos & Rubber Co., Chicago.

Features: Product is equipped with pump-down control system, and five-row cooling coils mounted in a



vertical position. All service connections and the hermetic compressor are easily accessible. Available in 3 and 5 ton models which can be installed in spaces 19" and 22 $\frac{3}{4}$ " deep respectively. Unit can be equipped with an auxiliary fan to augment air flow of furnace fan. Circle No. 170 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

Baseboard Diffuser

Product: New warm air baseboard diffuser.

Manufacturer: Kritzer Radiant Coils, Inc., Chicago, Ill.

Features: Product has snap-on front cover, built in balancing damp-



er, and optional shutoff damper for easy installation. Constructed of

heavy gauge steel with safe rounded corners the "Air Base" is offered in a number of standard and special sizes. A full range of matching accessories is also provided.

Circle No. 171 on Reader Service Card

Round Pipe Dampers

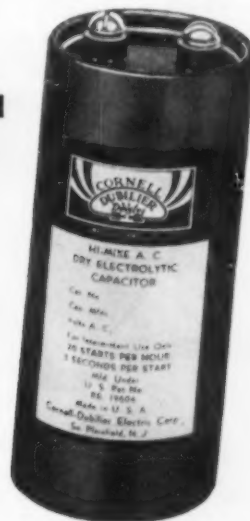
Product: Prefabricated "Jiffy" dampers with regulator in two models.

Manufacturer: Duro-Dyne Corp., New Hyde Park, N.Y.

Features: Lower cost than shop-fabricated units is claimed for these dampers. Series "JD" uses

With motor manufacturers C-D Motor Capacitors are first by far. With motor, refrigerator, air conditioning, oil burner and household appliance maintenance servicemen, C-D capacitors are first choice. You can be sure of C-D's outstanding field performance record and ease of installation. This, plus C-D's great range of types makes it the preferred line among men of experience. That's why Distributors who know, carry the complete Cornell-Dubilier line.

WANT THE
BEST
IN MOTOR
CAPACITORS?
C-D
TO BE SURE!



Always insist on C-D—there's a right type for every motor. Ask your C-D distributor for your free copy of C-D's famous motor capacitor Manual and Catalog No. 163. He's listed in your classified phone book. Cornell-Dubilier Electric Corporation, Dept. CR95, South Plainfield, New Jersey.



CONSISTENTLY DEPENDABLE
CORNELL-DUBILIER CAPACITORS

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; PROVIDENCE AND HOPE VALLEY, R. I.; INDIANAPOLIS, IND.; SANFORD AND PUGUAY SPRINGS, N. C.; SUBSIDIARY: THE RADIANT CORPORATION, CLEVELAND, O. THERE ARE MORE C-D CAPACITORS IN USE TODAY THAN ANY OTHER MAKE

Circle No. 63 on Reader Service Card

only one bearing. Series "JDS" has pre-attached spring-lock bearing and is preferred for higher velocities or when it is necessary to keep damper in perfect position.

Circle No. 172 on Reader Service Card

Scale Remover

Product: "Lignate," a compound for removing silica scale from heat exchange equipment.

Manufacturer: Chemical Solvent Co., Birmingham, Ala.

Features: Product cleans silica scale from pipe lines, water jackets, and condensers and is effective where

muratic and hydrochloric acid may be unsuccessful. It meets problem especially common in seashore areas, in one and five-gallon containers, compound is simply poured through apparatus. Cleaning time is about 30 minutes.

Circle No. 173 on Reader Service Card

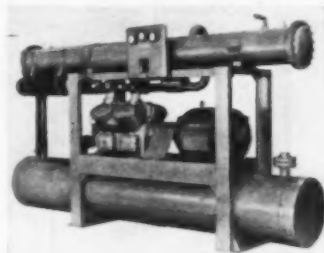
Water Cooling Machines

Product: Complete line of 12 "packaged" water chillers.

Manufacturer: Carrier Corp., Syracuse, N. Y.

Features: Designed for air conditioning and process refrigeration

installations where space is critical, units will pass through the average-size doorway. All components come



as a single unit and are mounted in a structural steel frame either vertically or horizontally. Reciprocating compressor has automatic capacity control which "unloads" cylinders at start-up for matching compressor operation to cooling requirements. Units range in size from 5 to 125 hp.

Circle No. 174 on Reader Service Card

number 4 in a series of ads to help you better understand the servicing of Tecumseh hermetic compressors.

**HERMAN
HERMETIC
says**



IT'S ALL IN
THE BREAKS
AS TO HOW I
PERFORM

*...give me a clean break
when you form the discharge and suction lines*

The compressor or highside you receive from your wholesaler is dehydrated and charged with oil. It is clean and free of moisture. The only way that dirt or moisture can get in is while you are applying it to the job. Therefore, these simple precautions in installation will help protect your customer and yourself from getting dirt in the system.

1. Cut all tubing cleanly with tube cutter.
2. Check carefully for filings or small pieces of dirt in the tube.
3. Solder in the presence of nitrogen to prevent oxidation.
4. Use sealed tubing and do not open until ready to use.

These operations are simple and automatic to most servicemen. However, although elementary they should be foremost in your mind at all times. How careful you are in making connections, determines how well the compressor will perform.



TECUMSEH PRODUCTS
TECUMSEH, MICH.
MARION, OHIO
Company

EXPORT DEPT.:

P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Mich.

Circle No. 64 on Reader Service Card

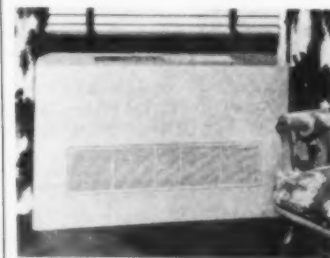
World's Largest
Producer of
Compressors for the
Refrigeration Industry

Console Air Unit

Product: Self-contained room air conditioning unit.

Manufacturer: York Corp., York, Pennsylvania.

Features: Outside air intake is installed flush with outside wall. Eliminates cluttered-up window sills and interference with window-washing. Unit connects directly into con-



ventional steam or hot water heating pipes. Quiet operation and low installation and operating costs are claimed.

Circle No. 175 on Reader Service Card

Two-Pen Recorder

Product: Two-pen round chart potentiometer recorder.

Manufacturer: Bristol Co., Waterbury, Conn.

Features: Makes possible keeping of two continuous records at same time. With both records on one chart, comparison of related measurements are simplified and are more accurate than when two separate charts must be studied. Such applications might include wet and dry bulb readings for humidity measurement, Btu and temperature differential measurements, etc. In-

PENN MAKES A BETTER CONNECTION



Booth. No. 315

for COPPER and ALUMINUM

PRODUCTS
FOR ALL INDUSTRIES
REFRIGERATION
AIR CONDITIONERS
FREEZERS
COOLERS

When the job at hand calls for copper tubing, you'll find the far-reaching advantages of PENN quality tubing pay big dividends. Engineers specify PENN for trouble-free installations in condensers, refrigerant lines and evaporators. Drawn to close tolerances and your exact specifications, PENN tubing produces better results in all appliance applications.

And, if your design department specifies aluminum tubing or extrusions, your PENN connection will help you in solving your own particular problems. Contact your PENN representative or wholesaler or write direct for detailed information.

COPPER TUBE
COILED • CAPILLARY
STRAIGHT LENGTH
FABRICATED
FLARED • FITTED

ALUMINUM
COILED TUBE
STRAIGHT LENGTH
FABRICATED
SHAPES



QUALITY TUBING HAS A "PENN NAME"

PENN BRASS & COPPER COMPANY

ERIE • PENNSYLVANIA • TELEPHONE 3-1164

Circle No. 67 on Reader Service Card

Jiffy Fit



The NEW DOUBLE STRAP
AIR CONDITIONER

PROTECTOR

The only REAL fit for ALL model window
air conditioners.

Only FIVE sizes and stock numbers.

Attractive forest green fabric.

Clear plastic packaging with visible
instruction sheet.

Inexpensive.

A fast and easy seller.

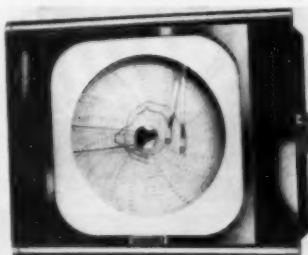
Contact

**TULSA CANVAS
PRODUCTS CO., INC.**

P. O. BOX 2072

Tulsa, Oklahoma

strument can be used to measure
and control any variable which can



be translated into an electrical quantity: temperature, speed, pressure, weight, etc.

Circle No. 176 on Reader Service Card

Winter Air Conditioners

Product: Packaged winter air
conditioners for residential heating.

Manufacturer: Thatcher Furnace Co., Garwood, N.J.

Features: Units are fully automatic and are either gas-fired or oil-fired. Made in three sizes for easy installation, they can be easily adapted to summer air conditioning. Heavy gauge steel heat exchanger is unconditionally guaranteed for 10 years. Optional equipment includes automatic humidifier.

Circle No. 177 on Reader Service Card

Flush-Mounted Conditioner

Product: New flush-mounted 2-hp room air conditioner.

Manufacturer: Mitchell Mfg. Co., Chicago.

Features: Unit is designed for use in room of 1000 to 1300 sq. ft. in floor space. Cabinet size is same as that of company's $\frac{3}{4}$, 1 and $1\frac{1}{2}$ hp units. Engineered to comply with ARI-EEL-NEMA joint recommendations, and rated power factor under UL conditions is 93%. Suggested retail sales price is \$599.95.

Circle No. 178 on Reader Service Card

CARRIER SUBSIDIARY FORMED IN HOUSTON

Carrier-Houston Corp. has been formed as a subsidiary of Carrier Corp. in Houston, Tex. The new organization is the only Carrier subsidiary in the country engaged in the distributing business.

The new organization will handle all products of Carrier's Unitary Equipment Div., including room units, residential air conditioners, and commercial packaged units, as well as components for use by installers of small custom-built air conditioning and refrigeration systems.

Carrier-Houston Corp. will cover metropolitan Houston as well as the Beaumont-Port Arthur-Orange, Bryan-College Station, and Galveston-Texas City areas. President of the company is Walter H. Steitler, who has been with Carrier for 21 years.

HEATING & VENTILATING SHOW CHANGES ITS NAME

The International Heating & Ventilating Exposition, has changed its name to International Heating & Air-Conditioning Exposition.

Established in 1930, this exposition is held on a biennial basis in the odd-numbered years, under the auspices of American Society of Heating & Air-Conditioning Engineers.

The last exposition was held in Philadelphia, January of this year. The 1957 exposition will be held at International Amphitheatre in Chicago, from Feb. 25 to March 1.

NO Stuck Pumps FOR ME NEXT SPRING!



PUMP-AID is the new aerosol product giving push-button protection against corrosion and stuck pumps on seasonally operated cooling towers, evaporative condensers, etc.

To protect against corrosion and other down period problems, inject PUMP-AID through drain hole into pump housing immediately after draining. PUMP-AID is supplied in aerosol canister using Freon type propellant which instantly spreads a generous coating of special (patent pending) coating over all surfaces. PUMP-AID is also highly beneficial in preserving neoprene, rubber and graphite type seals.

Other outstanding PUMP-AID features are: It will not freeze; will not evaporate; requires no special job preparation; adheres to surfaces permanently until flushed off;

is water soluble—not necessary to drain when new season starts; (just throw switch and begin operation); non-toxic—may be used for domestic pumps if properly flushed; economical to use.

Protect "YOUR" pumps with PUMP-AID now! YOU can save many dollars in repairs next spring!

...and for COMPLETE WATER TREATMENT in refrigeration, air conditioning and water recirculating systems use Vapco Cleaner, Vapco Preventive, Vapco Slime-X and Ice Cube Machine Cleaner.

Available at your favorite wholesaler, or write...



The GARMAN COMPANY
ST. LOUIS 23, MISSOURI

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

Circle No. 66 on Reader Service Card

SAVINGS IN HP . . .

Continued from page 49

at the total pressure drop through the system from the point of compression to the point of exhausting the fluid does not exceed a total pressure rise in the compressor. In this case it was decided to reuse the air but twice since there were two processes, each of which used approximately the same amount of air and whose increase in air temperature and increase in moisture loading of the air were almost identical.

Two identical heat exchangers having surface of 194 sq.ft. were purchased, to perform the function of removing 75,500 Btuh from the combined air-moisture stream, while a pair of air separators similar in principle to refinery type "knock-out" were designed to insure adequate removal of the moisture after it had been condensed. The entire system, due to space limitations and in order to keep the size of the Freon heat exchangers down, was visualized to be run as a system whose evaporators or chillers would be flooded with liquid Freon which would be allowed to boil off and return to the

refrigeration compressor in a conventional refrigeration cycle.

Since the duty had been established at approximately 150,000 Btuh at a 35 or 36 F suction temperature and a 105 F condensing temperature, a Worthington Freon condensing unit with 15 hp, 220-volt high torque motor, magnetic line starter, safety control, and automatic capacity reduction, was purchased and installed. One Acme heat exchanger was furnished with this unit, while the necessary suction, liquid, and control lines, etc., as well as the refrigeration controls consisting of thermostatic expansion valves, liquid lines strainer, liquid lines sight glass, charging valve and liquid line solenoid valves, were to be installed on a single contract with the refrigeration equipment.

Figure 2 is a flow diagram for the refrigeration equipment.

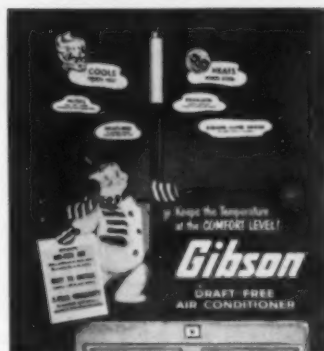
To control the air temperature over a fairly wide range of operating conditions, and so that the air temperature leaving each cooler could be varied independently, a Johnson Service system was employed that utilized the equipment shown in Fig. 3.

Both coolers work the same. On an increase of chilled air discharged temperature, thermostat T1 increases its branch pressure and closes the double pole single throw pneumatic electric switch PE1. This starts the compressor and opens the liquid solenoid valve V1. The reverse occurs on a decrease in air discharge temperature.

When the thermostat is controlling at normal loads, the back pressure valve V3 position is determined by the control pressure from thermostat T1. When the load is increased, thermostat T1 will increase its branch pressure to control back pressure valve V3 in a lower setting. Likewise, when the load decreases, thermostat T1 will increase its branch pressure to control back pressure valve V3 at a higher setting.

It was found possible at the calibration of the controls at start-up to have the thermostat sensitivity set so that the 1-degree increase or decrease in air temperature resulted in the control pressure being up or down by one pound per sq.in.

DOUBLE DUTY UNIT



DUAL ROLE of Gibson air conditioner—heating as well as cooling—is pointed up in this combination cardboard display and mobile, which revolves about brightly colored pole by means of a clock motor.

This resulted in practically a linear air pressure setting for 10 degrees either side of the control point chosen, which was 50 F. While all calculations had been based on a 59 or 60 F air temperature, it was felt that this represented the maximum moisture content permissible, and that perhaps some saving in air use would be made if the air could be dried to even a lower saturation temperature.

In the actual operation the system has worked exactly as visualized and designed, with one exception. It has been found that under intermittent operation, such as week-ends, the Freon compressor has a tendency to lose its oil to the chillers. It is hoped that eventually an immersion type heater will be placed in the crankcase of the machine so that the crankcase is always kept warm and there will be no tendency for the Freon to pick up oil and carry it out of the crankcase of the compressor.

WORTHINGTON MIDWEST SERVICE DIV. MOVED

Worthington Corp.'s Midwest Regional Engineering and Service Div. has been moved to new and air conditioned quarters at 6124 North Pulaski Rd., Chicago. This expanded operation will be under the direction of L. R. Dise, manager. The Chicago District sales office under the direction of W. C. Cheek, manager, will continue at 400 West Madison St.

SIMS CELEBRATES



SURPRISE party by employees of Larkin Coils, Inc. greeted O. M. Sims, president, and Mrs. Sims on their 25th wedding anniversary. A silver coffee urn was presented to the couple, along with 25 pieces of silver, one for each year of their married life. As each piece of silver was presented by a different employee, an event from the couple's life was recounted in a "this-is-your life" fashion.

336,000

miles of extrusions!



Our extruders have turned out enough plastic and rubber extrusions to reach to the moon and halfway back. In compiling this vast experience General Tire's Industrial Products Division has supplied thousands of original equipment manufacturers with just about every known type of extrusion. No job is too large, too small or too complicated for our design and production staff. Perhaps you can benefit from the fantastic extrusion mileage we've accumulated down through the years.

For literature or further information write to The General Tire & Rubber Company, Wabash, Indiana, Department B-1.

*"From Plans to Products
in Plastics and Rubber"*

**THE
GENERAL
TIRE**

Industrial Products Division
WABASH INDIANA

Circle No. 68 on Reader Service Card

USEFUL

BULLETINS • BOOKLETS • CATALOGS

EVAPORATIVE CONDENSER DATA for contractors is now available in an expanded installation manual issued by Drayer-Hanson Co. Set forth are installation and maintenance instructions for full range of the company's evaporative condenser equipment. The manual also features assembly and piping diagrams, resume of maintenance points, and a time span breakdown for servicing.

Circle No. 111 on Reader Service Card

SOLENOID VALVES of all types produced by A-P Controls Corp., are pictured and described in bulletin RS141 recently issued by that company. The 6-page, 2-color folder features familiar types as well as newer valves and contains information on proper selection, features, coil construction, lift ratings, coil frequencies, liquid capacity and typical applications.

Circle No. 112 on Reader Service Card

TIME CONTROLS designed for defrosting purposes are featured in a four-page catalog recently issued by Paragon Electric Co. Various models in the company's complete line are illustrated and described.

Circle No. 113 on Reader Service Card

SOLDERING FLUXES AND SOLDER are pictured and described in a new two-color catalog issued by M. W. Dunton Co. Featuring the company's complete line, the catalog gives information on pastes, fluid fluxes, soldering salts, solder and solder point and includes a section showing several new products.

Circle No. 114 on Reader Service Card

FRACTIONAL HORSEPOWER drive components for light machinery and appliances are detailed in a 4-page catalog (H-155) of Congress Drives Div., Tann Corp. The line includes V-belt pulleys and belts, bushings, couplings, pillow blocks and flange bearings.

Circle No. 115 on Reader Service Card

PROPER SELECTION of sizes and models in water coolers is detailed in charts provided by a brochure (A-284) of Sunroc Corp. Other charts show capacities and specifications of various styles in this firm's line.

Circle No. 116 on Reader Service Card

TECHNICAL BULLETIN on a straight line strainer for pressures up to 150 P.S.I., is now available to design engineers. Published by Hays Mfg. Co., the 4-page folder (No. 240) describes applications and includes flow and dimensional charts.

Circle No. 117 on Reader Service Card

ELECTRIC MOTORS, in sizes from 1/2 to 30 hp. and in single phase, polyphase, and DC styles, are described in an 8-page catalog (SDA-155) of Peerless Electric Co. Standards and specifications, enclosures, and special mountings are included in the information it supplies.

Circle No. 118 on Reader Service Card

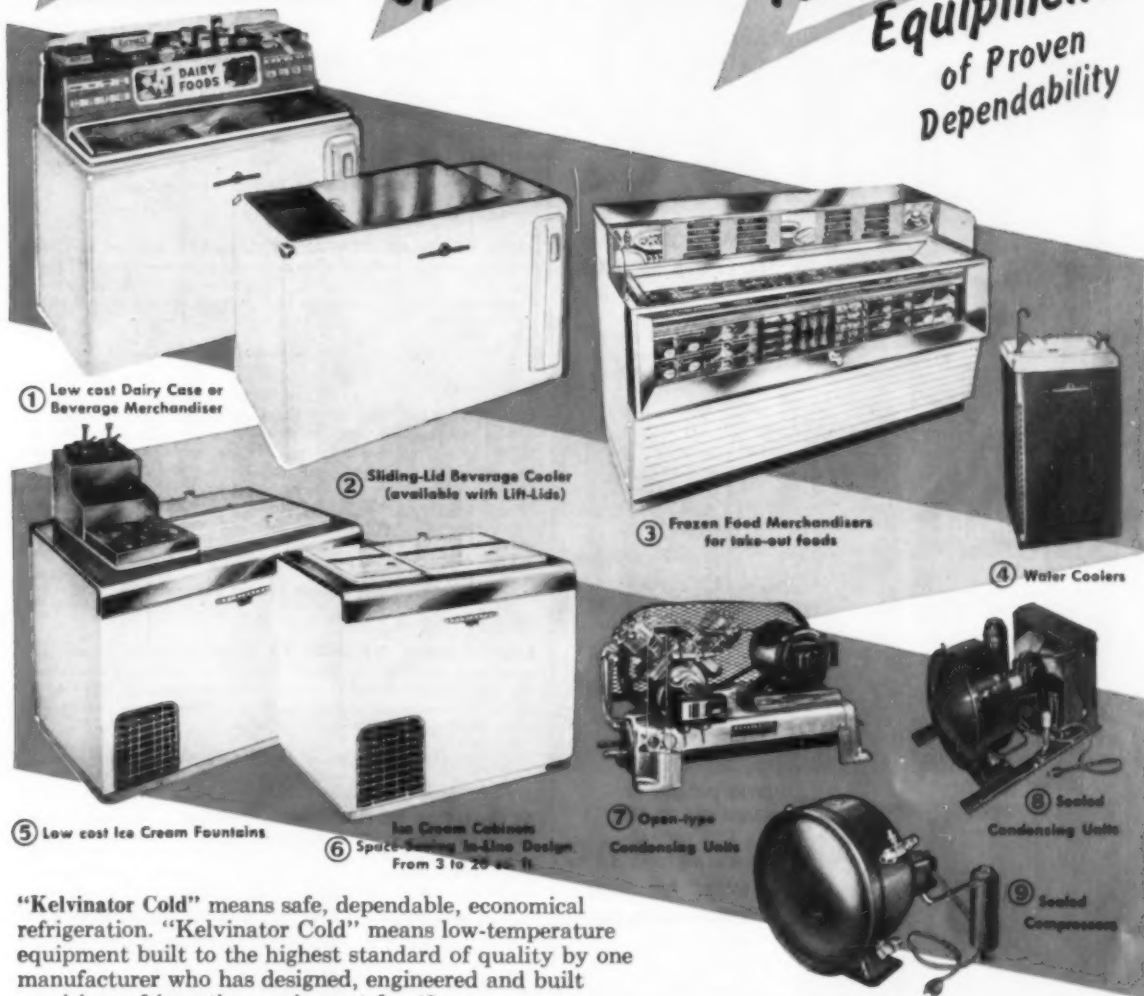
(Turn to page 98 for more Useful Literature)

Only "Kelvinator Cold" gives you ALL 3

**Low
Original Cost!**

**Low
Operating Cost!**

**Low
Temperature
Equipment
of Proven
Dependability**



"Kelvinator Cold" means safe, dependable, economical refrigeration. "Kelvinator Cold" means low-temperature equipment built to the highest standard of quality by one manufacturer who has designed, engineered and built precision refrigeration equipment for 40 years. It means that you get more for your money, low-operating cost, low original cost and long, trouble-free service when you standardize on Kelvinator.

When your business depends on cold you can depend on

Kelvinator

Specialists in Refrigeration Since 1914

Write Kelvinator For Further Information

Commercial Dept., Kelvinator Div., Dept. CR-9 American Motors Corp.
14250 Plymouth Road, Detroit 32, Mich.

Gentlemen:

- ☐ Send complete product, pricing and financing data on those products numbered in your advertisement.
☐ Have your representative call.

1. ☐ 2. ☐ 3. ☐

4. ☐ 5. ☐ 6. ☐

7. ☐ 8. ☐ 9. ☐

Name.....Title.....

Company Name.....

Street Address.....

City.....Zone.....City.....

Here's further proof why STA-KOLD-VIMCO-SNO-QUEEN ARE THE FASTEST SELLING REACH-IN REFRIGERATORS!

THE FIRST AND ONLY
REFRIGERATORS IN THE WORLD
EVER TO WIN THE



FROM
INSTITUTIONAL
FEEDING & HOUSING

THERE ARE MORE
PRACTICAL AND MONEY
SAVING FEATURES IN
THESE REFRIGERATORS
THAN IN ANY
OTHER MAKE



YOU,
YOURSELF
CAN CHANGE
THE INTERIOR
IN MINUTES

WITHOUT
TOOLS

OR
THIS

TO
THIS



Patents Pending



EVERY INTERIOR IS
ADJUSTABLE TO TAKE
ANY OR ANY
COMBINATION OF

- BAKERS PAN SLIDES
- STATIONARY OR PULL-OUT SHELVES
- REFRIGERATED DRAWERS
- STATIONARY OR PULL-OUT MEAT RAILS

100% ALL-METAL COMMERCIAL REFRIGERATORS & FREEZERS

WRITE, PHONE OR WIRE FOR
REPRESENTATIVE OR INFORMATION

VICTORY

METAL MANUFACTURING CORPORATION
PLYMOUTH MEETING, PENNA. Phone: COshohocken 6-5000

DIRECT FACTORY REPRESENTATIVES IN ALL PRINCIPAL CITIES • SOLD ONLY THROUGH SELECTED DEALERS

Circle No. 70 on Reader Service Card

USEFUL LITERATURE . . .

Continued from page 96

CHARACTERISTICS of packingless, self-priming centrifugal pumps are explained in a 12-page booklet of LaBour Co., Inc. These pumps are sealed by the same liquid that they pump. Installation and operating instructions and a parts list are also included in the booklet.

Circle No. 119 on Reader Service Card

COMPREHENSIVE DETAILS on cooling tower and heat exchanger fans are contained in an 8-page bulletin (A-111A) of Hartzell Propeller Fan Co. This firm makes fans in extremely large as well as moderate sizes, with plastic, all-aluminum, and plastic-impregnated wood blades. Adjustable pitch blades are also included.

Circle No. 120 on Reader Service Card

NEW MODEL OF CENTRIFUGAL PUMPS of immersion type are described by text and scale drawings in catalog sheets (30 and 30 J.I.C.) of Graymills Corp. The pumps are in various dimensions; motors are in 1/4-hp size with a range of voltage and phase combinations.

Circle No. 121 on Reader Service Card

GENERAL PURPOSE CONTROL DEVICES is the subject of a new 68-page catalog of General Electric Co. Designated GEC-1260A, the two-color publication contains photos, book prices, wiring diagrams and includes a special section correlating by horsepower, components for each type of motor control application. Also included is information comparing applications and merits of manual and magnetic control and across-the-line and reduced-voltage control. Other data covers starter modifications, auxiliary interlocks and renewal parts.

Circle No. 122 on Reader Service Card

SELF FLARING FITTINGS for hydraulic pressures are pictured and described by Flodar Corp. in a new four-page folder. The publication (BA-555) gives complete technical information on performance and assembly of the fittings and provides a chart for the proper selection of tube.

Circle No. 123 on Reader Service Card

ACTUAL SIZE PICTURES are used by H-B Instruments Co. to illustrate its line of thermometers for general household use and many special industrial uses. Designated as Catalog 20, the 12-page, three-color publication provides complete specifications, dimensional data and prices.

Circle No. 124 on Reader Service Card

INFORMATION ON V-DRIVE BELTS is provided in a new 3-color, 24-page catalog of Maurey Mfg. Co. In addition to listing the entire Maurey line, the catalog gives concise and complete information, including construction and applications, on super, steel cable, open end and hexagon v-belts as well as v-belt linking.

Circle No. 125 on Reader Service Card

HANDY REFERENCE on correct method of cleaning and maintaining stainless steel milk holding tanks is a special instruction issued by Allegheny Ludlum Steel Corp. Printed on heavy card, the bulletin provides information on cleaning and sterilizing practices as well as a listing of available cleaning agents.

Circle No. 126 on Reader Service Card

(See page 85 for Air Conditioning Literature)

KRAMER

UNICON

FOR

SUPERMARKETS



WRITE NOW
FOR
BULLETIN U-291

**ONE UNICON
serves up to 16 compressors
WITHOUT A DROP
OF WATER***

*UNICON is a Remote-Type Air-Cooled Condenser

KRAMER TRENTON CO. • Trenton 5, N.J.

NEW PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 89)

Acetylene Outfit

Product: Portable "Prest-O-Lite" welding and cutting outfit.

Manufacturer: Linde Air Products Co., Div. of Union Carbide & Carbon Corp., New York, N.Y.

Features: Single blowpipe heats, bends, solders, brazes, welds, and cuts, using interchangeable tips. Standard package is for welds up to



3/16" and cuts to 3/8" of solid steel. Additional tips are available for welding to 3/8" and cutting up to 2". Package includes blowpipe, one cutting and three welding tips, oxygen and acetylene pressure regulators, fitted double hose, friction lighter, goggles, and wrench.

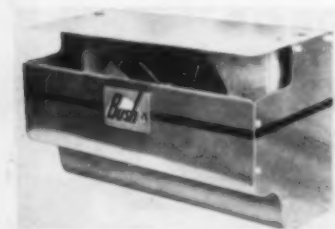
Circle No. 131 on Reader Service Card

Compact Unit Coolers

Product: "J-F" Jet-Flo unit coolers for ceiling or wall mounting.

Manufacturer: Bush Mfg. Co., West Hartford, Conn.

Features: Patented "Inner-Fin" coil construction permits use of a smaller coil than conventional units



making the product more compact, with lower static pressure and less Freon charge required. Extra fan supplied as standard equipment allows air direction to be either suck-through or blow-through. Wall

mounting brackets are furnished which automatically provide proper spacing between unit and wall. Product is of non-ferrous construction with stainless steel case.

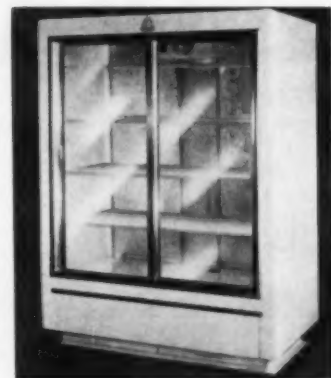
Circle No. 132 on Reader Service Card

Display-Storage Line

Product: New series of refrigerated display and storage cabinets.

Manufacturer: Penguin Corp., Livonia, Mich.

Features: Display cabinets include two models, UG-40-S (40 cu. ft.) and UG-70-S (70 cu. ft.), both



of all-steel, sliding door construction and fully self-contained. Units are designed for storage of beverages, dairy foods or flowers. Model UG-40-S is 76" high, 30" deep, 55" wide. Eight adjustable shelf sections are cooled by 1/2 hp condensing unit. For special applications 1/2 hp unit is available at additional cost. Merchandising cabinet (Model G-5800-GW) holds over 750 packages of frozen foods in 16 cu. ft. of storage space, and has 24 sq. ft. shelf area. Powered by 1 hp condensing unit. Cabinet features fluorescent lighting, and is available with either electric or hot gas self-defrosting units. Model has 37" serving height, is 56" high, 32" wide, 80" long. Models 5400-GA and 5800-GA aisle display cabinets are also available with automatic defrosting or a plate-type freezer, and with glass or solid front panels. Units are 80" long, 32"

wide, 48" high; 5400-GA cabinet uses 3/4 hp machine. Dairy products merchandiser (5800-DW) has 37" serving height. Bottom shelf (27") and second shelf (17") are refrigerated for full 77" length. Non-refrigerated display is provided on 10" wide center shelf and 16" top shelf. Cabinet is 80" long, 34" deep, 56" high, uses 3/4 hp condensing unit.

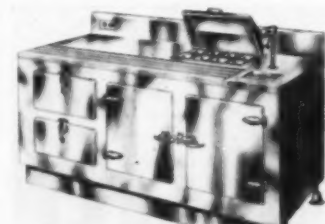
Circle No. 133 on Reader Service Card

Combination Unit

Product: Combination low-boy refrigerator and sandwich unit.

Manufacturer: Star Metal Mfg. Co., Inc., Philadelphia.

Features: The 6 ft. long unit has eight 4-inch insets in the top,



covered by a swing-back hood. Has toaster stand accommodating two 4-slice toasters and a removable cutting board and a built-in water cooling and storage tank, rated at 20 gal. per hour. The entire unit is insulated and the refrigerated base is equipped with two refrigerator doors and two locker-type drawers. Exterior and interior finish is stainless steel with all hardware chrome plated.

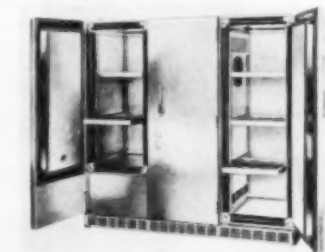
Circle No. 134 on Reader Service Card

Defrosting Freezer

Product: Model FA-60-S self-contained freezer with automatic hot gas defrosting system.

Manufacturer: Victory Metal Mfg. Co., Plymouth Meeting, Penna.

Features: Defrosting system eliminates ice scraping and ice



build-up. Interiors are adjustable on 1" centers to take any combination of bakers pan slides, meat rails, shelves or drawers. Full length doors permit utilization of full storage space. Of all metal construction with stainless steel, aluminum

or baked white enamel finish, models are complete with $\frac{3}{4}$ hp hermetically sealed units. Width $75\frac{3}{4}$ "", depth $33\frac{1}{2}$ " (exclusive of hardware), height $72\frac{3}{4}$ ". Also available in remote and pass-through models from 15 to 90 cubic feet.

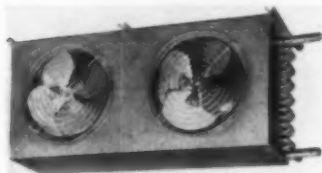
Circle No. 135 on Reader Service Card

Air Cooled Condensers

Product: Fan-condenser units of 2 to 10-ton capacities.

Manufacturer: A. H. Witt Co., Los Angeles, Calif.

Features: Units are designed for single or multiple compressor



installations, and are applicable for either indoor or outdoor use. Cores are fabricated of copper tubing with aluminum fins and are housed in a heavy casing.

Circle No. 136 on Reader Service Card

Capacitor Analyzer

Product: Model BF-70 analyzer for capacitors and resistors.

Manufacturer: Cornell-Dubilier Electric Corp., South Plainfield, N.J.

Features: Portable unit locates capacitor opens, shorts, and intermittents; tests high and low capacities, detects high leakage and high



power factor in electrolytic capacitors, and low insulation resistance in paper, mica, and ceramic dielectric capacitors, and performs several other functions. It has a direct reading calibration scale, and its built-in panel meter is arranged for independent external measurements to 750 volts and to 75 milliamperes.

Circle No. 137 on Reader Service Card

Priming Paint

Product: "Zincoater" paint with zinc base for protecting new metal.

Manufacturer: Tropical Paint Co., Cleveland, Ohio.

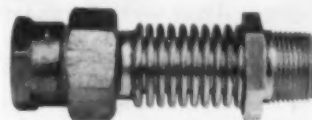
Features: Formula combines zinc dust with other materials to provide base that will not permit the formation of a water soluble salt when covered by a finish coat. Tests indicate this primer protects metal better than galvanizing. Manufacturer recommends it for water tanks, ductwork, outdoor signs, and similar metalwork. Water in contact is unaffected for drinking of manufacturing purposes.

Circle No. 138 on Reader Service Card

Flexible Nipple

Product: All bronze-brass construction flexible nipple.

Manufacturer: Techniflex Corp., Port Jervis, N.Y.



Features: Product has union fitting on one end and male fitting on other end. Flexible portion consists of bronze seamless tubing having

NEW BONNEY WRENCH



Once again—BONNEY is quick to recognize the refrigeration mechanic's specific needs. The new BONNEY No. 1248 Wrench is designed especially to fit the new Sporan thermostatic expansion valves (Types P and H). Thin, short handled, with 30° head ... this $1\frac{1}{2}$ " open-end wrench makes it easy to remove the power element from the valve body. Fast service demands the right tool ... put the new BONNEY No. 1248 in your kit today.

Other BONNEY Sporan Expansion Valve Wrenches available with $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", and $1\frac{5}{8}$ " openings. Either short handle, 30° head ... or long handle, straight head.

BONNEY FORCE & TOOL WORKS • ALLENTOWN, PENNSYLVANIA

Circle No. 72 on Reader Service Card

deep annular convolutions which permit easy stretching, bending or compressing. Standard units are provided in sizes ranging from $\frac{3}{8}$ " to $2\frac{1}{2}$ " I.P.T. Assemblies, with fittings, are available in any length desired.

Circle No. 139 on Reader Service Card

Refrigerant Distributor

Product: Venturi-type refrigerant distributor.

Manufacturer: Alco Valve Co., St. Louis.

Features: Product is precision-made to assure equal flow of re-

frigerant in multi-circuit evaporators. Designed to solve a number of problems connected with multi-cir-



cuit systems, the one-piece unit has no nozzles or parts and works equally well in any position. It has a wide application range, from 25%

of capacity to 150% of rated capacity, with only a small pressure drop at maximum conditions. The unit is easily installed and maintained.

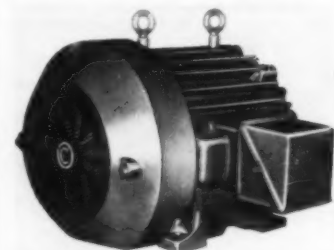
Circle No. 140 on Reader Service Card

Fan-Cooled Motor Line

Product: Rerated line of totally enclosed fan cooled motors.

Manufacturer: Century Electric Co., St. Louis.

Features: Stator windings have "six layer insulation" of plastic and plastic coated wire. Ventilating fan can be operated efficiently in either



direction. Motors are of rib-type cast iron frame construction for easy cleaning and rotors are balanced electronically. Sizes range from $7\frac{1}{2}$ to 100 hp and are recommended for use in dirty, dusty, fume and mist-laden atmospheres that could damage ordinary motors.

Circle No. 141 on Reader Service Card



Now! GASKET SELECTION MADE EASY...

GASKETS FOR REFRIGERATOR AND FREEZER DOORS

QUESTION: Does the "Curvall" Rubber Gasket have to look exactly like the gasket I replace to do the job right?

ANSWER: No. The only important factors are the gasket height and width. The height of the cushion — the most important consideration — must be the same as the original gasket. The gasket width should be sufficient to cover the panel screws.

EXAMPLE:

	CURVALL	GASKET A	GASKET B	GASKET C
CUSHION HEIGHT				

Jarrow's "Curvall" Series 1400 rubber gaskets are money-makers for servicemen because they:

1. eliminate notching on rounded corners of the late model units, sharply reducing installation time and effort.
2. give a "fresh-from-the-factory" appearance, eliminating need for the expensive pre-formed frame gaskets formerly used.
3. are guaranteed to give the fine quality service expected of a Jarrow product.

Start making money with "Curvall" now. Ask your wholesaler for full information.

11 "Curvall" Sizes — all 14 ft. lengths

service tip:

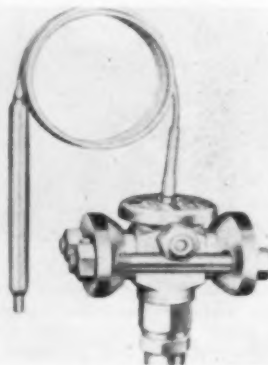
"Curvall's" 11 sizes (14 ft. lengths each) fit practically every late model door. Keep all 11 in your car and you'll make more per service call through time saved in having the correct gasket on hand.

Expansion Valves

Product: New series of thermostatic expansion valves (V-202 and V-203) for refrigeration and air conditioning applications.

Manufacturer: General Controls Co., Glendale, Calif.

Features: Valves respond to very small changes in superheat and provide smooth control. High sen-



sitivity is result of packless construction and low-friction stainless steel push pins. Flange-type connectors provide non-loosening, frost-proof connection, easily removable



JARROW PRODUCTS

420 NORTH LA SALLE STREET • CHICAGO 10, ILL.

Circle No. 73 on Reader Service Card

for servicing or replacement. Valves are in capacities for 2.5, 3.5, and 6.5 tons for Freon 12 or Genetron 12; also 3.5, 5.5 and 10.5 tons for Freon 22 or Genetron 141. Model V-202 uses a semi-liquid charge that permits mounting the unit in any position and in any ambient temperature. Model V-203 is gas charged, with bulb protecting the valve from high temperatures. By limiting evaporator pressure, it also prevents compressor overload conditions. A 60" capillary tube is provided to facilitate installation.

Circle No. 142 on Reader Service Card

Quick-Connect Coupling

Product: High pressure, gravity flow and vacuum quick-connect "E" coupling.

Manufacturer: Snap-Tite, Inc., Union City, Penna.



Features: Provides instant line shut-off when equipped with valves.

Special packer gives positive seal when coupling is connected and extra-strong barrel springs hold valves closed when disconnected. Small sizes of unit hold vacuums in micron range when either connected or disconnected. Large inside diameter assures full flow with minimum pressure loss and recessed valve washers allow positive metal-to-metal stop when valve is closed. Furnished in alloy steel, brass, aluminum and stainless steel, with or without valves. Heavy cadmium plating is one of a variety of finishes available. Standard sizes range from 1/8" thru 3" inside diameter, and sizes to 10" are available.

Circle No. 143 on Reader Service Card

Protective Coating

Product: "Corrocote 2362" neoprene base protective coating.

Manufacturer: Chemical Coatings & Engineering Co., Broomall, Pa.

Features: Protects surfaces against moisture, oils, chemicals, corrosion, etc. Can be applied by brush, roller, spray or dip; dries quickly and self-vulcanizes to form firm rubbery barrier. Has good adhesion to metal, concrete, wood and fabric. Will withstand air temperatures to 250 F. Available in gray, black, aluminum and red. Applica-

tions include exteriors of pipes, ducts, air conditioning and ventilating equipment.

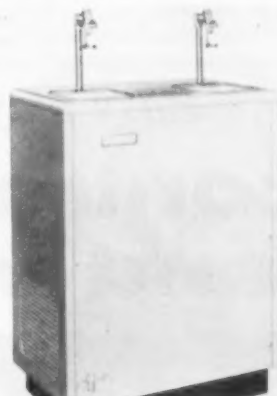
Circle No. 144 on Reader Service Card

Water Coolers

Product: "Beverage-Air" water coolers in 32 new models of industrial and restaurant types.

Manufacturer: Punxsutawney Co., Punxsutawney, Pa.

Features: Designed to provide



large capacity for peak loads through cooling of incoming water

The EXTRA FEATURES you get in
Service-Master
make it your best service body buy



"FREEZE-FREE" HINGES
Bronze bushings are provided in door hinges to positively prevent binding.

CONCEALED FENDERS

Dirt, sludge, and water—thrown by the tires—can't reach compartment walls.



"HIGH-LOW" FLOOR
Provides added strength—easier handling of heavy loads.

"NO-BOUNCE" BINS

The hinged cover keeps parts in the bins, and provides an extra storage shelf.

"PUDDLE-PROOF" CARGO AREA

A full-width floor drain is built into the head panel.

Service-Master's competent look helps sell your service... reflects your discriminating taste.

Send for this **FREE BOOKLET** describing all the extra features you get in Service-Master.



Compare Service-Master... feature by feature... with any other make. See why Service-Master is the first choice of servicemen in all parts of the country.

Available in 1/2, 3/4, 1, and 1 1/2 ton sizes.

MCCABE-POWERS AUTO BODY CO.

POWERS

3900 NO. BROADWAY • ST. LOUIS 18, MO.

Send me the Service-Master "EXTRA FEATURES" booklet... and have nearest distributor furnish me local delivered prices.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

A2

BUILT TO OUTLAST SEVERAL CHASSIS

Circle No. 79 on Reader Service Card

and storage of this chilled water in a large tank held at 40 F or whatever other setting is desired. Safety control prevents freezing. All controls easily accessible. Designed to meet all sanitary codes and Government requirements. Capacities range from 20 to 110 gph. Bubblers or glass fillers are optional. Top and receptor bowls are stainless steel with sides in baked enamel or stainless steel. For restaurant or cafeteria use, stainless steel top shelves or adjustable side shelves on brackets are available.

Circle No. 145 on Reader Service Card

Vibration Mounting

Product: Heavy-duty, rubber-in-shear vibration mounting.

Manufacturer: T. R. Finn & Co., Hawthorne, N.J.

Features: Product consists of a pair of rubber-in-shear isolators



mounted at an angle between a semi-steel base and cover. Unit isolates vibration, provides shock and overload control, and reduces transmission of sound to or from mounted equipment. A pre-loading nut on the mounting controls the degree of shock protection. Mountings are available with non-walking, rubber-bottomed baseplates which eliminate "creeping" of equipment. Loaded overall height of mounting is 3" and load capacities range from 500 to 2500 lbs. per mounting.

Circle No. 146 on Reader Service Card

Easy way to control noise and vibration



...install units
on
ISOMODE® PADS

• It's easy to avoid complaints due to annoying vibration and noise. When installing air conditioning units, simply set them on ISOMODE PADS. Just cut what you need for the weight of the unit, place the Pads under each corner and that's it. ISOMODE PADS swallow up vibration, muffle noise on any type floor.

Made of Neoprene, these cross-ribbed, 5/16"-thick pads cut with ordinary shears, need no cementing, resist oils and water, last for years. One standard economy package of ten 18" x 18" ISOMODE PADS gives you enough for mounting 160,000 pounds of equipment. Write for prices and detailed Bulletin No. 415.

the MB manufacturing company, inc.

1060 State Street, New Haven, Conn.

HEADQUARTERS FOR PRODUCTS TO ISOLATE VIBRATION . . . TO EXCITE IT . . . TO MEASURE IT

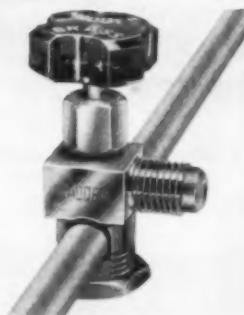
Circle No. 76 on Reader Service Card

Piercing Valve

Product: "HP-41" hermetic port valve for testing, charging or purging operations on any hermetically sealed unit.

Manufacturer: Madden Brass Products Co., Aurora, Ill.

Features: Single valve pierces tubing of 3/16", 1/4", 5/16" and 3/8"



sizes. Tube is automatically centered. Valve is made from extruded brass bar and is only 2" in largest dimension. Tightening nut can't score or collapse tube. Normal wrench torque can't strip threads. Recessed sealing gasket can't slip or fall out.

Circle No. 147 on Reader Service Card

Truck Crane

Product: "Hoist-O-Matic" electric crane for mounting on trucks (Model 1000).

Manufacturer: Hoisters, Inc., Kansas City, Mo.



Features: Power unit in base, operating 50' cable, will lift 1000 lbs. from 4' boom which revolves

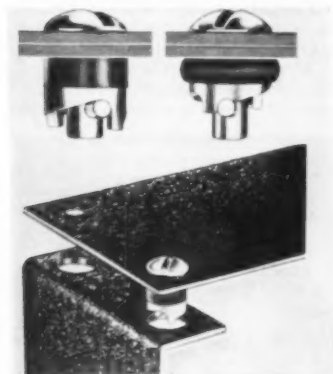
360 degrees. Crane is 6' high and may be mounted in any position on truck bed. Long cable permits skidding of loads as well as direct lifts. Automatic braking permits instantaneous stops. Push-button control is provided.

Circle No. 148 on Reader Service Card

Quick-Action Fastener

Product: "Vibrex" panel-to-base fastener and vibration isolator.

Manufacturer: General Tire & Rubber Co., Akron, Ohio.



Features: Quick-release fastener smother's rattles, noise, vibration,

shock, and compensates for misalignment between panel and base. It is water, dust and pressure proof. Installation requires no separate receiver unit. Locking action results from controlled expansion of a special rubber sleeve which exerts a pressure of over 150 lbs. A half-turn locks or disengages the unit. Useful in fastening metal, plastic, glass or composition board and is made in a variety of types including latches for cabinet doors and drawers.

Circle No. 149 on Reader Service Card

Heat Measurer

Product: Thermistor radiometer for measuring temperature either by contact or at a distance.

Manufacturer: Williamson Development Co., West Concord, Mass.

Features: Device permits temperature readings from surfaces of equipment, human or animal skin, building walls and liquids. Sky and ground temperatures are also obtainable for environmental studies. Temperatures at a distance may be taken by merely directing instrument at the desired object. Type "HD2" uses a.c. power for laboratory applications. Type "HL2" is battery-powered for portable use in field. Unit consists of temperature detecting head, amplification circuit, and a reference black body for cali-

bration. Accurate operation is afforded by a self-compensating component. Portable model (including batteries) weighs 13 lbs.

Circle No. 150 on Reader Service Card

Defrost Timer

Product: "Intermatic T670" time switch for automatic defrosting of commercial refrigeration units.

Manufacturer: International Register Co., Chicago, Ill.

Features: As many as 14 defrost cycles a day may be set on single



dial, and each cycle is adjustable for periods from five to 60 minutes. Units can be used for single pole, single throw, with contacts normally

Be Sure of the charge with

LIQUID EYE[®] INDICATORS

2000 SERIES (Illustrated)



Designed especially for larger commercial installations in low, medium, or high temperature applications. Precision-built Allin **LIQUID EYES** feature such advance design improvements as **full-line flow, positive sealing, highest quality gasket materials, and precision parts** which keep refrigerant losses to an absolute minimum. Here's equipment you can install with confidence, whether it be the 1/4" or 1-1/8" size.

Insist on genuine "LIQUID-EYE" — Allin's trade name of **quality** — from your wholesaler.



Allin MANUFACTURING COMPANY

1153 West Grand Ave., Chicago 22, Ill.

Circle No. 78 on Reader Service Card
& AIR CONDITIONING • SEPTEMBER, 1955

AUTO-LITE

TEMPERATURE RECORDING...

Newly designed, Model "1000" Auto-Lite Recorder gives permanent proof of temperature behavior. • 6" clear reading chart; various standard ranges from minus 40°F. to plus 550°F.

• 3 standard types; choice of 24-hr. or 7-day cycle. • Electric or mechanical chart drive. • With capillary tubing for remote reading. Priced from \$49.50.

Send for new catalog describing many styles of Auto-Lite Temperature Recorders and Indicators.



Model "1000"

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

TEMPERATURE RECORDERS

Circle No. 77 on Reader Service Card



LARKIN TURRET HUMI-TEMP

The acid test of any product is performance. That's why you will find Larkin products used so widely for so many different refrigeration and air-conditioning applications. Users know from past experience that they can count on Larkin for top performance—day in, day out—year in, year out.

Manufacturers of the original Cross-Fin Coil • Humi-Temp Units • Frost-O-Trol Hot Gas Defroster • Evaporative Condensers • Cooling Towers • Air Conditioning Units and Coils • Direct Expansion Water Coolers • Heat Exchangers • Disseminator Pans.

WATCHDOG OF THE NATION'S FOOD SUPPLY

LARKIN COILS INC.
319 MEMORIAL DR., S.E. • ATLANTA, GA.

closed; single pole, single throw, with contacts normally open; or single pole, double throw, with alternating contacts. Switch has synchronous type timing motor, black on yellow dial, and convenient knockouts and mounting holes.

Circle No. 151 on Reader Service Card

All-Purpose Torch Kit

Product: "Bernz-O-Matic" propane-fueled torch kit.

Manufacturer: Otto Bernz Co., Rochester, N.Y.



Features: Contains disposable fuel cylinder, pencil flame burner unit, utility burner head, flame spreader and soldering tip. Provides

necessary tools for repair and maintenance jobs and hobby work in the home or shop. All five items are packaged in an acetate window box.

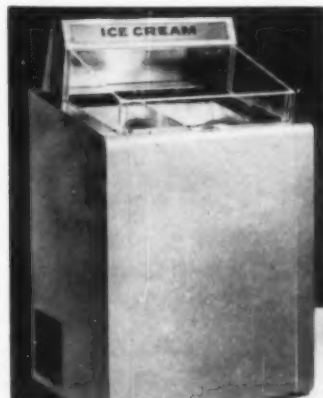
Circle No. 152 on Reader Service Card

Ice Cream Case

Product: Space-saving display case for ice cream specialties, designed for use where minimum floor space is available.

Manufacturer: National Market Equipment Co., Royal Oak, Mich.

Features: Unit has plexi-glass superstructure to provide visual display and prevent pilfering. Customer service is by means of rear panel. Case has self-contained refrigerating unit for either 110 or 220-volt



current. It is finished in baked enamel with a choice of colors, and measures only 27" wide, 30" deep, and 51" high.

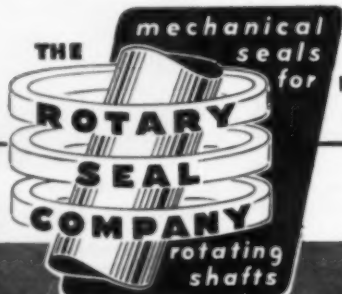
Circle No. 153 on Reader Service Card

ROTARY SEAL

Replacement Units

The original replacement units—performance-proved in many thousands of installations during almost a quarter century. Available in a wide range of sizes for Commercial, Semi-Commercial, Air Conditioning and Household Refrigerator Compressors of well-known makes.

AT
ALL
LEADING
JOBBER'S



EASY TO
INSTALL
EFFICIENT
IN OPERATION
ECONOMICAL

2020 NORTH LARRABEE STREET
CHICAGO 14, ILLINOIS, U.S.A.

CANADIAN AGENT: 2023 ADDINGTON AVENUE, MONTREAL 28, QUEBEC, CANADA

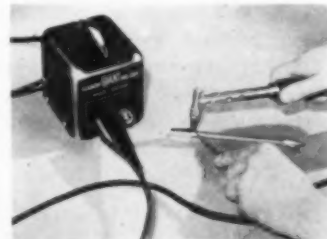
Circle No. 74 on Reader Service Card

Handy Welder

Product: "Handy Giant" electric welder operates from house current or automobile batteries.

Manufacturer: Cauhorn Mfg. Co., Detroit, Mich.

Features: Device is convenient for utility jobs; will braze, solder,



etch, and cut holes in metal as well as weld. No glasses are needed by operator, and no special skills are required. Light in weight, yet powerful and safe, with no shock hazard.

Circle No. 154 on Reader Service Card

INSURANCE . . .

Continued from page 74

ing. These units were suspended from the ceiling, with free blow toward each side wall. They are mounted in pairs, back to back, midway between each run of air conditioning duct and between the end ducts and the end walls.

Two more unit heaters, mounted diagonally in the end corners of the building, were installed to temper the air in the storage area during the winter months. No cooling was required in this area.

All heaters were vented by means of stacks projecting through the roof and provided with approved rain caps.

One of the most important advantages of this particular type of system is its extreme flexibility. If not all of the bays in the production area are operating, only the units serving the bays actually in use need be operated, and all others can be shut down. In effect, spot cooling can be provided virtually as desired. Any of the packaged air conditioners can be used for ventilation only, if desired, which is an important consideration during certain seasons of the year.

Packages Used Throughout

Two additional self-contained air conditioners were installed to handle the requirements of the office and cafeteria areas. A 10-ton unit was needed for the cafeteria, while an 8-ton unit proved ample for the office space.

The cafeteria unit was located right in the 72 x 35' serving area, and connected to a duct running along one wall down the full length of the room. This duct steps down in size from 19 x 20" at the unit to 14 x 13" at the far end. Five 30 x 6" supply grilles, each rated at 600 cfm, distribute the conditioned air throughout the entire room.

Ducting for the office unit is somewhat more complex, in view of the fact that this 63 x 35' space is subdivided into a number of separate cubicles. The 8-ton air conditioning unit itself is located in a separate equipment room,

along with a hot water boiler which supplies the heating system for the office, cafeteria, and toilet areas.

Installation of outside air ducts and other accessories for the office and cafeteria units was handled in much the same manner as on the units in the production area. On each conditioner, canvas connections were provided between all ducts and the unit itself. Condensate pumps were mounted alongside each pair of units in the sewing room, as well as alongside each of the two individual units in office and cafeteria area.

Cooling for the 41 x 35' toilet area, which is located between the offices and the cafeteria, is provided through a 9 x 9" extension of one of the sewing room ducts, terminating in a 16 x 6" supply grille mounted in the wall which separates this area from the sewing room. Three roof-mounted 1500-cfm exhaust fans provide the necessary ventilation for the toilet area.

Six separate atmospheric cooling towers were located on the roof of the building, one for each pair of units in the shop and one each for the office and cafeteria conditioners. Each tower was located as nearly as possible directly above the unit or units which it serves, in order to shorten the piping runs. The general contractor on the job framed in a seat for each cooling tower to help support its weight.

WOLVERINE SHIFTS SALES PERSONNEL

A series of changes among field sales personnel has been announced by Wolverine Tube, Div. of Calumet & Hecla, Inc. J. H. Smith, east central district sales manager, moves to Wolverine's new Detroit branch office which will become headquarters for the east central district. Replacing Smith in Dayton will be R. B. Flynn who becomes territorial supervisor of Wolverine's Columbus, Ohio, and Louisville, Ky., offices.

Jack Gavigan, formerly sales representative in Louisville, replaces Flynn in Detroit and Jack Sheehan will replace Gavigan in Louisville.

OLD THEATER . . .

Continued from page 73

distributing air from the cooling unit above it.

At the end of this duct which faces the stage of the theater are located two 15 x 28" high volume supply grilles with opposed blade type volume control. Air delivered through these grilles cools the front section of the main floor area. Two similar grilles at the opposite end of the duct, which faces into the theater lobby, provide cooled air for that area. Four supply outlets on each side of this same duct complete the air distribution pattern of this portion of the system.

Steam Coils Provide Heat

Another factor emphasizing the economy of this installation is that the entire theater is heated during the winter months by means of this same balcony system. The two-row, non-freeze steam heating coils supplied with the air handling unit do the job nicely, thus eliminating the need for any separate heating system.

By the same token, except for a few extremely hot days or at times of exceptionally high occupancy, this balcony system alone handles the entire cooling job during the summer, holding the temperature throughout the theater at a comfortable 72° F.

Another important factor is that despite the fact that the overall capacity of this installation is 100 hp, actually no one part of the system is greater than 40 hp in size. This makes all maintenance and service on the system a relatively simple proposition.

How well has the aim of economy been achieved in this installation? Well, total installed cost of the job approximated only \$30,000, a relatively low figure for a 100-ton air conditioning system. And M. W. Rose, theater supervisor for the United Detroit Theater chain, testifies to the fact that because of its unique design the operating costs of the Cinderella system are the lowest of any theater in the chain having equipment of comparable size.

DRAYER-HANSON COOLERS NOW PRE-ASSEMBLED

"Flexazone" central-plant air conditioning equipment of Drayer-Hanson, Inc. will now be completely factory pre-assembled before shipment, saving considerable field labor. Previously, units have been sent to job sites in three sections—fan, coil and plenum. The only structural change involved is relocation of mounting channels.



ENTIRE COMMUNITY USES HEAT PUMPS

The largest sale of heat pumps ever made, according to General Electric Co., consists of 431 Weathertron units which provide cooling in summer and warmth in winter for an entire community of homes at Fullerton, Calif.

In addition to a heat pump, each home has an oven, range, dishwasher, garbage disposer, refrigerator, washer-dryer, and water heater. Yet no combustible fuels are used anywhere in the project.

In summer, the air conditioning units pump heat and moisture from the home to the outdoors. In winter, they extract heat from the outdoors air and pump it indoors to heat the home.

J. B. Edmondson Co., Santa Ana, Calif., installed the units. Developer of the project is Kusa, Inc.

WHOLESALE GIVES 10-WEEK COURSE

A 10-week course in "Application Engineering and Estimating" was recently conducted for Chicago area contractors and sales executives by Airo Supply Co., parts wholesaler.

The 10 lecture sessions were conducted by Ion Calgor, chief engineer, Refrigeration Systems,

Inc., Chicago, and covered the following subjects:

General refresher on principles; fundamentals of heating and cooling calculations; medium temperature commercial applications; low temperature commercial applications; commercial applications of air conditioning (two sessions); residential air conditioning room coolers; residential central heating and cooling; residential central heating, cooling and duct work; heat pump and reverse cycle applied to air conditioning.

Because of the interest expressed by participants, the company plans to re-open the course early in the fall.

BRUNNER REPORT CITED

Brunner Mfg. Co. has been given a Merit Award by "Financial World" for its 1954 annual report. This is the third consecutive year in which the company has received an award, and puts it in competition for a bronze "Oscar of Industry" trophy, judging for which is now in progress.

CLAIM SPEED RECORD INSTALLING AIR UNIT

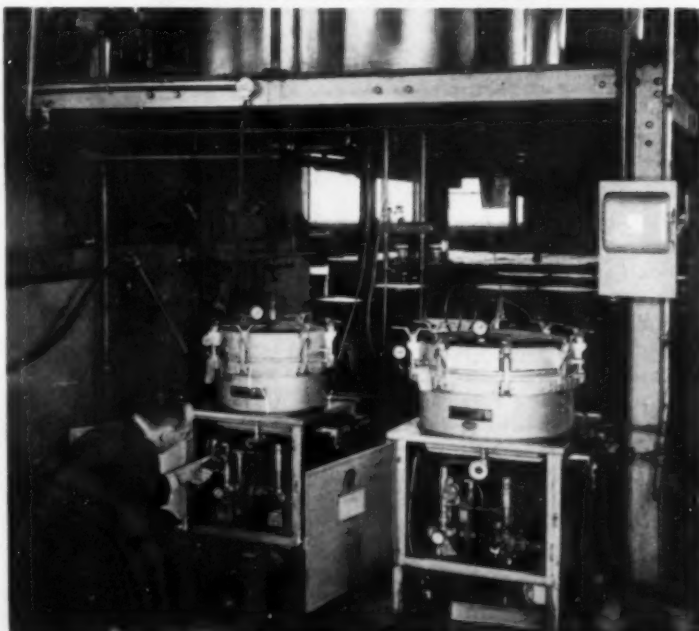
A possible speed record for installation of a 25-ton central air conditioning system has been reported by H. N. Stall, of Lamatt Agency, Inc., New Orleans representative of U. S. Air Conditioning Corp.

The system was put into operation in the Oasis Club, a Pearlington, Miss., restaurant, only four days after it was ordered from the manufacturer in Minneapolis.

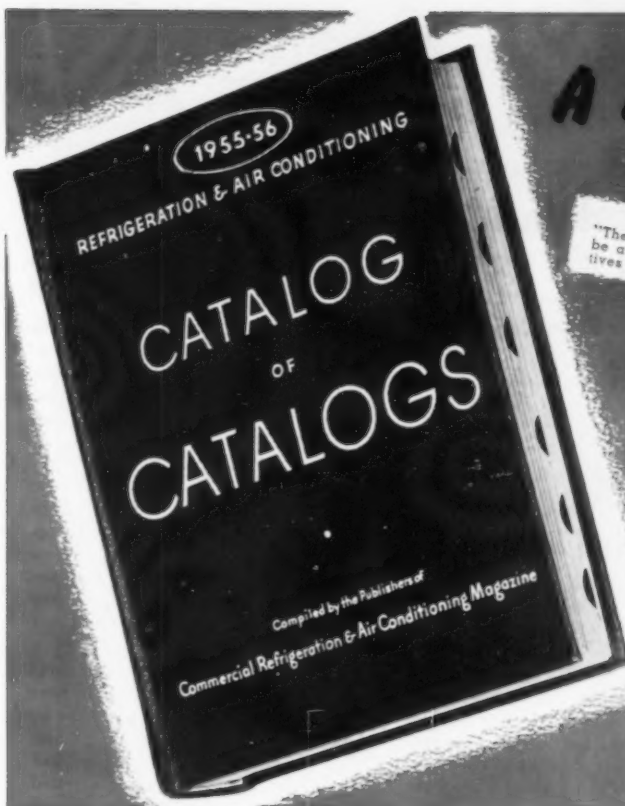
The factory-assembled and pre-tested unit that contains, in a single casing, a complete central station air conditioning plant including evaporative condenser, was ordered by telephone by Mr. Stall. Shipped immediately from factory stock, it arrived in New Orleans in the early morning four days later. In the meantime the necessary ductwork had been fabricated and installed on the job.

The equipment was connected to the ducts the same morning that it arrived and was in full operation the same day. Installation was by Brisset Refrigeration Co.

LICKING THE MOISTURE PROBLEM



MOISTURE, NO. 1 ENEMY of operating efficiency, is removed from refrigeration oils at the plant of York Corp. by this blending and dehydrating equipment. York refines, packages and ships the oil used in its refrigeration and air conditioning equipment, and has been following this practice for some 30 years. A well refined, properly dehydrated oil has a very low affinity for moisture; approximately 20 to 30 parts of water per million of oil. To guard against any possibility of contamination in shipment, the company uses new steel drums exclusively in packaging bulk oil shipments.



A HIT!

"... congratulations ... on a splendid job well done ..."

"... we find that it has taken a giant first step in providing the type of information that users of commercial refrigeration and air conditioning equipment need most."

"The 1955/56 Catalog of Catalogs will be a valuable asset to the representatives of our company ..."

"... a well organized reference ... just what we need ..."

THIS IMPORTANT REFERENCE CATALOG

— the first volume of its kind — bound in a durable hard cover — has had immediate acceptance by the industry. This single volume combines all the product specifications and data of commercial refrigeration and air conditioning equipment, both packaged and remotely installed, as well as all the components of such units and systems. Manufacturers present their own catalog and specification sheets in this book.

AIR CONDITIONING EQUIPMENT SECTION

Bound-in manufacturers' catalogs or specifications sheets, with working technical data and source listings. The feature of this section is the comparative specification listings of 1955 lines of room, store, and residential air conditioners. These are presented in the same manner as that of previous years, which has been so successful, and used by so many thousands of men in this field.

COMPONENT SECTION

General engineering, contracting, and architectural working data, including comprehensive listings of components and accessories. Information to aid in the application of equipment in refrigerated or air conditioned areas. Bound-in manufacturers' catalogs and specifications sheets.

CASE AND FIXTURE SECTION

Refrigerated case manufacturers' catalogs and specifications sheets answering problems in the application of packaged and remotely installed cases and coolers for merchandising or storage of all types of food and beverage products. Blueprints of practical store plans for typical food market layouts. Listings of manufacturers of this equipment.

"WHERE TO BUY LOCALLY" — Wholesaler Section

Listing by geographical area, the independent local outlets for refrigeration and air conditioning equipment and supplies. Printed on yellow stock and carefully collated to aid in establishing local purchasing sources.

Collated by the Publishers of

Commercial Refrigeration & Air Conditioning

1240 ONTARIO STREET
CLEVELAND 13, OHIO

Refrigeration & Air Conditioning **CATALOG OF CATALOGS**
1240 Ontario St., Cleveland 13, Ohio

Send me a copy of the 1955-56 CATALOG OF CATALOGS today.

☐ Enclosed is \$5.00 ☐ Bill me (Order No.)

Name

Street

City State

**ORDER
Your Copy
TODAY!**

\$5.00

PER VOLUME

THE COMMERCIAL REFRIGERATION and AIR CONDITIONING APPLICATIONS MANUAL

by Hugo C. Smith

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. All problems should be clearly and completely stated and addressed to: **COMMERCIAL REFRIGERATION AND AIR CONDITIONING**, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

Textile Mill Air Conditioning Requires Study Of Construction And Internal Heat Sources

THE biggest percentage of the textile industry in the United States is centered in areas where 76 F is the necessary design outside wet bulb temperature.

Cotton weaving will permit maintenance of a relative humidity of 75%, and thus lends itself somewhat to an evaporative cooling system, whereby it is possible to maintain inside conditions of 85 F dry bulb and 78 F wet bulb. While these conditions are close to the necessary levels to be maintained for cotton yarn, they do not necessarily fall within the comfort zone from the standpoint of personnel operating the textile machinery.

All other cotton processing, and most other yarns, require lower humidities. With a requirement of 65% relative humidity, it is impossible with an outside wet bulb of 76 F to maintain acceptable conditions with evaporative cooling systems.

In the approach to the textile mill problem, it is essential to first examine the type of construction and the interior heat sources in relation to the temperature and humidity level to be maintained within the space.

Since the thermal characteristics of the walls and roof are not too important from the standpoint of the operating cost of the system, it is generally impossible to attempt to justify insulation on the basis of operating savings.

Condensation, however, is a very important consideration, particularly where relative humidities in excess of 50% are to be maintained, or where inadequately sealed or exposed steel

building elements might result in excessive heat loss and condensation on the steel surface.

With the common 3" splined wood roof deck, it is not likely that troublesome condensation will occur with interior humidities of 60% or lower. However, the vapor seal on the cold side of the roof may cause the vapor passing through the roof deck to condense and deteriorate the planking and even cause some water dripping. Therefore, 2" of insulation

should be provided for all textile mill roofs.

In addition to eliminating objectionable condensation, the roof insulation will also afford some operating economies in the air conditioning system.

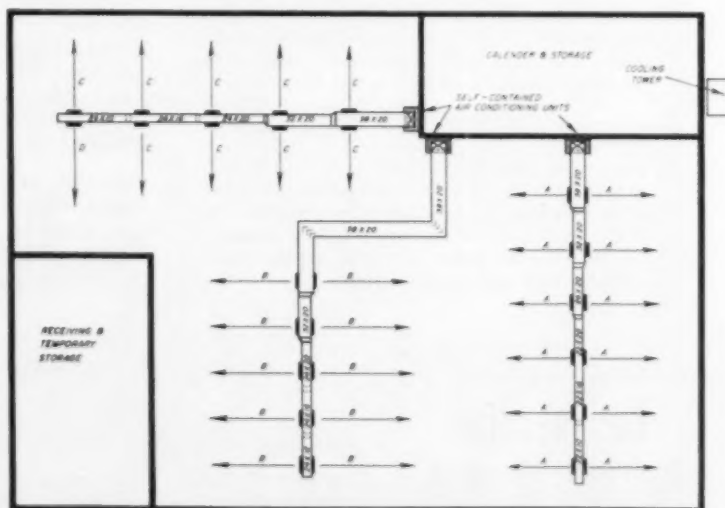
The problem at hand concerns the knitting room of a nylon sweater factory, located in Spencer, W. Va., having a floor area of 13,000 sq. ft. Conditions to be maintained within the room were 80 F dry bulb and 65% relative humidity.

The walls were constructed of two 5" courses of cellular tile with 2" vermiculite insulation fill between courses. All walls were solid construction with no windows. Roof construction was normal, with 2" of insulite fiber board insulation.

Normal occupancy consisted of 30 to 40 people. The machinery in the space was equivalent to 50 to 60 hp, and the light load was a little below normal at 1.75 watts per square foot of floor area. The total calculated cooling load was 373,000 Btu per hour.

Three (3) 15-ton self-contained package air conditioning units were selected as the basic equipment to maintain the inside design conditions. The cooling capacity of these three units was in excess of the calculated load, thus it was possible to run the units at a high back pressure, permitting the sensible cooling load within the space to be absorbed with

Continued on page 113



EQUIPMENT AND DUCT LAYOUT for the knitting room of a nylon sweater factory is shown in the sketch above. Each of the three 15-ton package air conditioners has its own independent duct system, with ducts sized on the basis of .08" pressure drop per 100 feet. Grilles were selected with wide deflection to give even distribution over the room, with approximately 60 fpm velocity in the breathing zone. Grille sizes and air quantities were: "A"—24" x 8", 500 cfm; "B"—24" x 6", 600 cfm; "C"—36" x 8", 585 cfm; "D"—24" x 8", 735 cfm.



Non-Waxing — Foam-Resistant —

unexcelled for all low-temperature applications.



Unmatched Stability — under all conditions of refrigerant dilution, heat and pressure.



Specified: by nearly all original equipment manufacturers.



Your Wholesaler Has It!

Distributed nationally by Virginia Smelting Company, Dept. 64, West Norfolk, Virginia.

VIRGINIA
Chemicals

ESOTO • KINETIC CHEMICAL'S "FREON" REFRIGERANTS
V-METH-L • CAN-O-GAS • PERMAGUM • PRESSTITE TAPE
SUNISO REFRIGERATION OILS



DO YOU KNOW WHY

YOUR SUBSCRIPTION TO THIS

MAGAZINE IS PAID FOR YOU?

You're Chosen Because You Qualify!

COMMERCIAL REFRIGERATION & AIR CONDITIONING readers are carefully selected by progressive independent wholesalers of refrigeration and air conditioning parts and supplies because they are 100% interested in the merchandising, sale, installation and maintenance of refrigeration and air conditioning equipment.

COMMERCIAL REFRIGERATION & AIR CONDITIONING is sent **only** to qualified readers. COMMERCIAL REFRIGERATION & AIR CONDITIONING goes to persons whose specifying and/or buying responsibilities are guaranteed by local refrigeration and air conditioning equipment wholesalers.

Your local parts wholesaler, who **knows** your interest in refrigeration and air conditioning, who **knows best** your buying habits, who **knows most** what you like to read—pays us for your subscription to COMMERCIAL REFRIGERATION & AIR CONDITIONING.



That's Franchise Circulation . . .

that's why YOU get this magazine without charge

Commercial Refrigeration & Air Conditioning

1240 ONTARIO STREET

CLEVELAND 13, OHIO

a minimum amount of moisture removal.

The calculated humidity load during summer operation was 142 pounds of water per hour to be added to the space to maintain 65% relative humidity. Each self-contained unit was equipped with steam heating coils and modulating steam valves, and in addition each unit was equipped with a steam jet type humidifier controlled by a humidistat.

A calculated heating load for the space was 322,000 Btu per hour with a winter outdoor design temperature of minus 5 F, (513 degree days) and this load was easily carried by the steam coils in the package units.

Distribution of air throughout the knitting room was accomplished by means of three independent duct systems (see sketch) sized on the basis of .08" pressure drop per 100 feet. Grilles were selected with wide deflection to give even distribution over the entire room with approximately 60 fpm velocity in the breathing zone.

DU PONT SALESMEN TEST AIR CONDITIONED CARS

Practicing what it preaches, the Du Pont Co., is equipping some of its "Freon" refrigerant salesman's automobiles with air conditioning to gain first-hand information on the use of such units.

Six cars will be fitted for the tests this summer, with two cooling units to be supplied by each of three manufacturers; Novi Equipment Co., Frigikar Corp., and A. R. A. Mfg. Co. Standard models of their air conditioners were chosen for testing under routine driving conditions in the south and southwest.

KOCH REFRIGERATORS MOVES TO NEW PLANT

Office and manufacturing facilities of Koch Refrigerators, Inc. have recently been moved from North Kansas City, Mo., to a new location in the Fairfax District of Kansas City, Kan. The new building is said to be the most modern commercial refrigeration plant in the world and is designed for straight-line production operation. Koch officials state that departments were moved in accordance with their sequence in the manufacturing cycle so that production continued throughout the entire move without interruption.

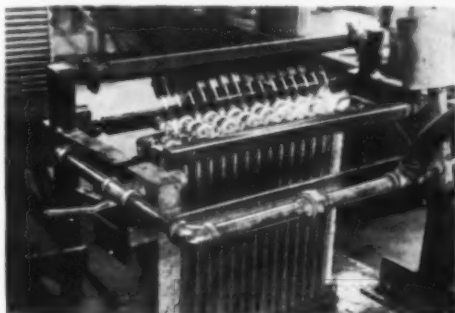


**MISTER—YOU BUY
COST SAVINGS
WHEN YOU BUY
EASY-FLO AND
SIL-FOS**

You buy savings in metal joining time, labor and materials when you purchase these tried-and-proved low-temperature silver brazing alloys. That's because their low flow points, exceptional fluidity and silver content combine to make brazing a surprisingly fast, simple, economical operation.

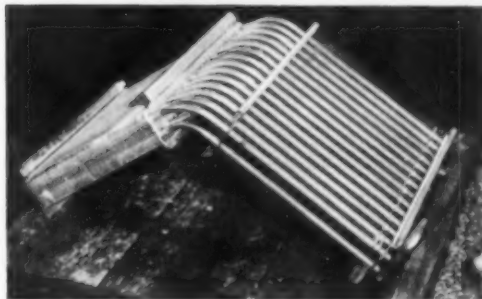
This is particularly true when you use EASY-FLO and SIL-FOS with a setup that "automationizes" the actual brazing.

Here's a typical example...



At right is the twin evaporator with SIL-FOS 5 rings in place around connecting tube ends ready for brazing. 28 joints are done — 14 at a time — in 12 1/2 minutes. SIL-FOS 5 consistently provides the *permanently leak-tight joints* on which the conditioners' performance and service life largely depend.

SIL-FOS 5 wire rings by the thousands are used in assembling the condensers and evaporators of FEDDERS Room Air Conditioners. At left you see return bends being brazed to condenser tubes. Bends are assembled on tubes with SIL-FOS 5 rings preplaced and brazed on the automatically-timed city gas-air burner setup shown. Three rows (40 joints) are done in less than 1 minute.



Expert brazing production know-how is always at the call of every EASY-FLO and SIL-FOS user without obligation.

WRITE FOR THE "AUTHORIZED DISTRIBUTOR LIST" and get prompt supply from the nearest one.

FOR EASY-FLO AND SIL-FOS FACTS IN PRINT... write today for a copy of Bulletin 20.



HANDY & HARMAN

General Offices: 82 Fulton St., New York 38, N. Y.

DISTRIBUTORS IN PRINCIPAL CITIES

There's no "... or equal" for EASY-FLO and SIL-FOS



OFFICES and PLANTS
BIRMINGHAM, CONN.
PROVIDENCE, R. I.
CHICAGO, ILL.
CLEVELAND, OHIO
DETROIT, MICH.
LOS ANGELES, CALIF.
MONTREAL, CANADA
TORONTO, CANADA

Handy Tube Bender

Smoothly Bends ANY
Pipe or Tubing



$\frac{3}{8}$ " to $1\frac{1}{8}$ " O.D.

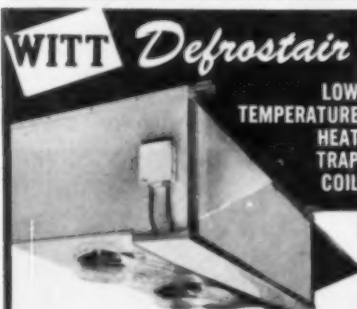


• Just a twist of the wrist assures perfect, even bends . . . right-angle, any angle. U and offset—every time. Eliminate need for ois. No more guesses—no kinks! Save enough time, labor and money on ONE job to pay for your Handy Bender.

See your supply house—or write for free folder today.

HOLSCLAW BROS., INC.

438 N. WILLOW ROAD — EVANSVILLE, IND.



DEFROSTS AUTOMATICALLY

FOR FRESH MEAT ROOMS BELOW 34°F, FOOD STORAGE, FOOD FREEZING, ICE CREAM STORAGE, INDUSTRIAL LOW TEMPERATURE APPLICATIONS.

Defrostair's patented heat trap system takes advantage of the fact that warm air rises and can be trapped under a hood. For example, move your hand a few inches above a lighted candle and only a small amount of heat is felt. Now place a metal container over the candle. In a matter of minutes it is extremely hot because the heat is confined under the canopy or hood.

WITT Defrostair patented heat trap coil requires only a low cost single pole, double throw time clock for complete automatic defrosting. Easy low cost installation, requires no re-evaporation or special plumbing. Available in 14 models ranging in BTU capacities of from 3800 to 38,000 at 10°F.T.D.

Write for data sheet

ONE OF A FINE LINE OF

A. H. WITT COMPANY
940 N. SYCAMORE AVE.
LOS ANGELES 28, CALIF.

WITT Coils

Circle No. 82 on Reader Service Card

New Compressor Warranty Program Set By Brunner

A new, comprehensive semi-hermetic compressor warranty program, tied in with a coast-to-coast team of 157 authorized refrigeration wholesalers, has been launched recently by the Brunner Co.

The new warranty program offers a standard one-year replacement service on Brunner-Metic condensing units and an additional five-year protection policy on the motor compressor only.

Under this program, 157 wholesalers, in 134 cities across the nation, each carrying a complete stock of replacement parts, have agreed to act as parts depots in connection with the program. Owners of Brunner condensing units, whether covered by a Brunner warranty or by the warranty of a fixture manufacturer, may make parts exchanges with any one of the 157 wholesalers.

In addition to the "parts depot" feature of the program, other features include: payment of freight both ways between the wholesaler and the Brunner Gainesville, Ga. plant by Brunner; a "fair working profit" on replacement transactions for the wholesaler; a system of compressor exchange prices for the dealer, and faster, cheaper service for equipment owners, according to Brunner officials.

Wholesaler Is Keystone

In announcing the warranty program, Frank C. Hawk, vice president in charge of sales, emphasized that the wholesaler is the keystone in its successful operation. He indicated that there will probably be additional wholesalers signing up under the plan as it progresses.

The wholesaler is obligated to carry an adequate minimum stock that represents a substantial investment, Hawk pointed out. This assures the customer that the replacement parts he wants will be available when he wants them.

The Brunner Co. is a wholly-owned subsidiary of Brunner Mfg. Co., long-time manufacturer of open-type refrigeration condensing units, packaged air conditioners,

and air compressors. The Gainesville plant, which went into production on its line of semi-hermetic units in the spring of 1954, is now producing these units in horsepower ranges from $\frac{1}{4}$ through 3, with a 5-hp model being planned.

To the fixture manufacturer, the plan means that he need carry no Brunner parts stock or handle any replacement transactions, always a complex and time-consuming operation. Also the new program is flexible, according to Hawk, to permit the fixture manufacturer to use either his own warranty program or the Brunner program. In either case, the fixture manufacturer uses the signed-up Brunner wholesaler organization.

All Factors Benefit

To the dealer, the program means that he need carry no Brunner parts stock, because prompt, interested service is no farther from him than his nearest authorized parts wholesaler, Hawk said.

To the customer, the program means that a replacement part is as near as the nearest authorized parts wholesaler.

The wholesaler is benefitted under the program for a number of reasons, Hawk said. First, the plan involves no complex record-keeping on the part of the wholesaler; all warranty records are maintained at the Gainesville plant. Second, Brunner pays the freight both on the outbound defective parts and on the inbound replacement part to the wholesaler.

A realistic profit incentive for the wholesaler has been incorporated in the plan, Hawk said, assuring the dealer and customer of the wholesaler's continued interest in the replacement business.

The plan also eliminates the common practice of replacing defective compressors with factory-rebuilt compressors, thus requiring wholesalers to carry dual stocks of motor compressors, Hawk added. Under the Brunner plan all replacement compressors are new units.

A user of Brunner-Metic units can obtain the five-year protection

plan by any one of three methods: (1) the dealer from whom he buys the unit can buy it on his behalf; (2) he can be furnished it by the fixture manufacturer; (3) he can buy it himself within 30 days after installation. A form for this purpose is attached to each machine. The factory returns his policy and a five-year defective parts claim coupon.

Here's how the new warranty exchange plan will work:

On electrical accessories, the wholesaler will exchange these without charge. He accumulates these parts, and they are inspected every 90 days by a Brunner district representative, who decides as to their disposition. The wholesaler is credited with full purchase price, plus freight.

On other condensing unit parts, the wholesaler will charge the cus-



tomers' representative (service company, dealer, etc.) for the part at wholesaler's discount off Brunner's list price plus freight. The wholesaler returns the part to the factory, and if found defective Brunner will credit the wholesaler and the wholesaler, in turn, will credit the customer, with the purchase price plus freight.

On the motor compressor itself, the wholesaler will charge the customer's representative the exchange sales price plus freight to and from the factory.

If the unit is found defective by the factory under terms of the warranty, Brunner will credit the wholesaler with full purchase price plus freight at the lowest tariff rate between the two cities, plus a handling credit. The wholesaler in turn credits the customer's representative with the exchange sales price plus freight charged.

The five-year protection plan, applying only to the motor compressor and its internal parts, requires in addition that the customer return to Brunner his defective parts claim coupon. The factory records on the coupon the results of its examination, and returns it to the customer. On parts found to be defective, the wholesaler is credited with purchase price plus freight, plus a compensation based on normal margins, and he in turn credits the customer's representative with purchase price plus freight.

On motor compressors, the wholesaler receives full purchase price plus actual freight charge, plus a sum equal to his margin on exchange sales price, for handling.

Compressors covered by a fixture manufacturer's warranty are handled in the same way, except that the customer or his representative presents the wholesaler's invoice to the manufacturer for payment. The same exchange procedure applies to motor compressors and parts out of warranty.

However, in this case the customer's representative buys the part at the exchange price plus freight; the wholesaler's compensation is the difference between his cost and the exchange price.

The program does not include or cover labor charges; these are to be handled between the customer and the service representative.

SERVEL JUNE SHIPMENTS SET ALL-TIME RECORD

Shipments of Servel room air conditioners for June were higher than for any other month in the company's history, exceeding the previous best month (April, 1954) by more than 8%, according to Richard A. Testut, vice president and general manager of the company's home appliance sales division.

SPOTLIGHT ON SOFT DRINK EXPOSITION

Bottlers from all parts of the country will see latest designs in beverage coolers as well as displays of modern water cooling equipment at the 1955 international soft drink industry exposition in Miami, Fla., Nov. 14-17.



IF YOU'RE GUNNING

for

PROFITS

LOAD UP

with the

COLDIN

LINE . . .

YOU CAN SELL

EVERY FOOD RETAILER

from the

SMALLEST . . .

to the

LARGEST . . .

THERE'S A CABINET AT A PRICE HE WANTS TO PAY!

The powerful Coldin line can be your key to new and larger volume in commercial refrigeration sales. Coldin has all the features, all the improvements retailers look for in cabinets.

COLDIN a franchise that means Profits! We like to tell you more about it. Wire or write and we'll get together.

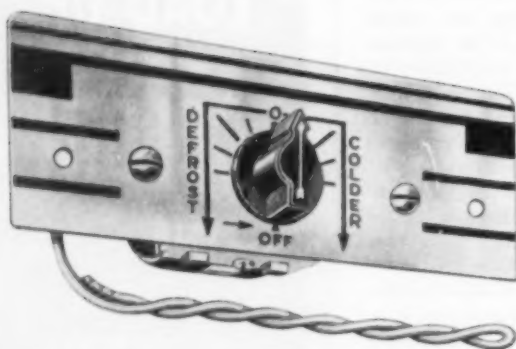
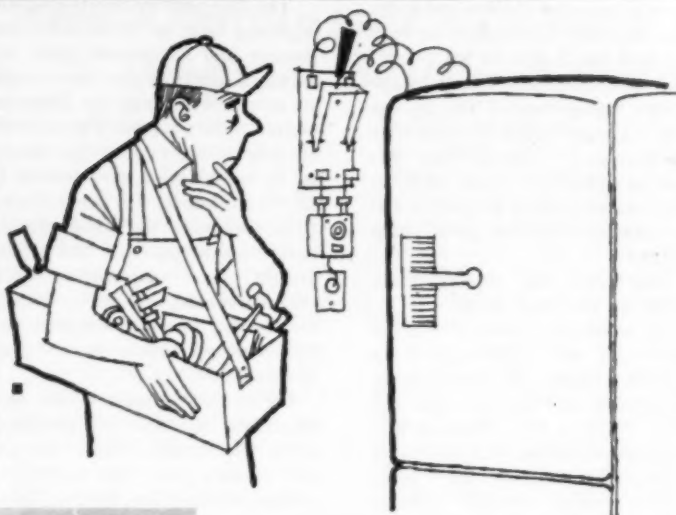
Coldin
NEW YORK

Your Key To
Better
Refrigeration

COLDIN CABINET CO., Inc.
2800 Webster Ave., N. Y. 58, N. Y.

Circle No. 83 on Reader Service Card

There's
a simpler
way...



Ranco Controls

**for household
replacement**

It's wasted work to "doctor up" misfit controls when there's a Ranco Control that does the job simpler, quicker and more profitably.

Your Ranco wholesaler will give you the right control the first time... a Ranco Control made to fit without fussing... made to serve without service. See him today. Install Ranco, to be sure.

Reference Manual for nearly 5,000 Ranco Controls



Ranco Replacement Reference No. 1544 lists almost 5,000 Ranco Controls... the most complete line in the industry. Purchase your copy of this handy guide to the proper control for every job from your Ranco wholesaler (not available from the factory).

**World's Largest
Manufacturer of
Refrigeration Controls**



Ranco Inc.

COLUMBUS 1, OHIO

THE SERVICE MAN'S DEPARTMENT

HERE'S HOW!

I DO IT THIS WAY

TO keep charging hoses free from dirt or moisture, after using a testing manifold, I remove the center flare fitting from the manifold and replace it with a tee of $\frac{1}{4}$ " F x $\frac{1}{4}$ " F x $\frac{1}{8}$ " pipe. When I finish using the manifold I wrap the charging hoses around manifold gauges with the open ends fastened on the ends of the tee fitting. Also, this arrangement has the added advantage of occupying less space in the tool box.

John A. Locilento
Philadelphia, Penna.

Laboratory Boxes Need Special Safeguards

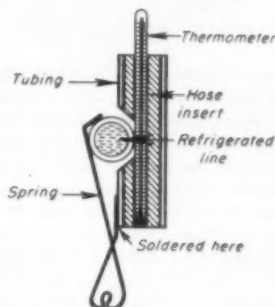
Any refrigerators for use in chemical, atomic, or other types of laboratories where explosive materials may be stored within the refrigerated space should be protected by every possible safeguard to eliminate the possibility of explosion within the box.

Actually, in ordering refrigerators for this purpose, it is possible to specify all controls and switches outside of the cooling compartments. In many instances, however, it is either necessary or desirable to convert a standard refrigerator to such laboratory use, and in these cases special precautions should be exercised.

Extension tubes are available for moving the cold switch to the top of any refrigerator cabinet, so as to prevent any possible arcing which might touch off an explosion of the contents stored within it. Automatic defrosting switches also could be disconnected for the same reason.

Door switches to inside lights also should be disconnected. It is safer to do this than to merely remove the lamp, which might be inadvertently replaced.

I DO IT THIS WAY



HERE'S an easy way to make a clamp that will hold a thermometer firmly to a refrigerant line.

Make $1\frac{1}{2}$ turns in the center of a small bronze rod and solder one end to the side of a 2" length of $\frac{5}{8}$ " copper tube. Place a 2" length of "Prest-O-Lite" hose inside the copper tube and cut a notch through both tubing and hose. Insert pocket thermometer inside hose exposing side of thermometer bulb in the notch.

Free end of bronze rod holds refrigerant line firmly against bulb making possible direct contact between the two. Notch can be cut to take $\frac{3}{8}$ " to $\frac{1}{2}$ " refrigerant tube with good contact between thermometer bulb and tubing. The rubber hose insulates the thermometer bulb from the surrounding air.

R. I. McClurg
Minnetonka, Manitoba

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

I DO IT THIS WAY

ON a low temperature walk-in freezer (-17 F) using blower coils and hot gas defrost, we had trouble with an overlap cooler door blowing open due to pressure from air being expanded by the warm coil as the unit came off the defrost cycle. To correct this trouble we installed a Ranco Q11-1754 pressure control to turn off the fans at 25 lbs suction pressure and turn them on again at 10 lbs suction pressure. This solved our problem.

This control also would be helpful in case the unit went off due to trouble. As soon as the suction pressure rose to 25 lbs the blowers would shut off. Otherwise, with the blowers operating and the unit off, the temperature in the freezer would rise very rapidly.

Al J. Dalpiaz
Dennison, Ohio

Reheat Often Necessary For Humidity Control

A successful air conditioning system must simultaneously and continuously control the temperature, humidity, air motion and air purity within a given space.

Control of these factors within acceptable limits results in a properly operating system based on the cooling load calculation. It is only from this cooling load calculation that the designer can determine whether or not it will be possible to keep the relative humidity within limits by using a by-pass system without reheat.

In working with a spray-type dehumidifier having a large water-to-air ratio, it can usually be assumed that 100% of the air has

**FAST
DEPENDABLE
ECONOMICAL**

PREST-O-LITE Trade-Mark Leak Detector Outfit



Fully adjustable gas regulator, 12½ ft. of hose, precision handle, leak detecting stem, and suction hose complete this valuable kit.

You can quickly locate the most minute leaks of halide refrigerant gases with this handy, air-acetylene, leak detecting outfit. An extra-long hose lets you work unhampered in those hard-to-get-at places. And a shutoff valve and built-in pilot flame control in the handle give you real convenience and economy. Ask your LINDE jobber for a demonstration. Or write LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Union Carbide Canada Limited, Toronto.

**GET IT FROM YOUR
LINDE JOBBER**

The terms "Prest-O-Lite" and "Linde" are registered trade-marks of Union Carbide and Carbon Corporation.

Circle No. 85 on Reader Service Card

come in contact with the spray water, and that the air leaves with a dry and wet-bulb temperature the same as the temperature of the leaving water or water in the sump. The temperature of the saturated leaving air and water is called the apparatus dewpoint (ADP).

When cooling surface is used as in coils with extended fins, the air doesn't make 100% contact with the surface and is not saturated. The percentage of air by-passed is called the "by-pass factor." Both this and the apparatus dewpoint



WANT TO EARN \$5?

Then dream up some good idea for saving yourself time, money, or aggravation on a service call, and tell us all about it. Just jot it down on the nearest scratch pad, together with a sketch if you think that would help, and send it to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor agrees that your idea is worthwhile, he'll make your dream come true by publishing it in the magazine and promptly sending you a check for \$5. Why not start reaching for that pencil right now?

can prove useful on the psychrometric chart and in load calculation.

It often happens that a peak load will require reheat. Any load that requires an ADP low enough to frost the coil should be provided with reheat. The amount of reheat required is simple to determine if it is remembered that reheat is the same as room sensible heat.

In choosing a desirable ADP, the room sensible heat ratio required is added to the missing amount of room sensible heat as reheat. There are several sources of heat for reheat: condenser water, hot gas, steam, etc. Condenser water is generally the simplest.

FINE

ICC REFRIGERANT

CYLINDERS

Acclaimed by Safety Engineers!

LO-BOY TYPE

Maximum safety assured, FINE Cylinders offer your cheapest insurance against explosion danger! Their extra capacity decreases high pressure due to hydrostatic expansion. Heavier metal walls, thicker at ends. Broad base prevents tipping, offers extra valve protection. Forged brass valves with fusible safety. (Spring loaded safety, slightly extra.) Cylinders hammered gray finish. Caps included (except 5E). Sizes: 5E, 10L, 25L, 35L.



Write for Catalog



HANDY-TOTE CAP

Provides an extra hand for the busy service men to carry tools, tubing and parts. Saves trips to service truck. Standard cylinder thread. Quickly transfers from one cylinder to another. Built to last.

REDIFLEX

**CHARGING
TYPE D HOSE**



Truly flexible, full 36" length, with leakproof Rapid Couplers and forged brass, 1-piece, 45° E-Z FLOW L-BO. Two-ply construction; heavy inner gas-tite Neoprene Core. Non-kinking, tight weave, very flexible, luster coated cover. Knurled nuts for finger-tip tightening.

ASK YOUR WHOLESALER

Write for new Catalog
No. 1152

FINE PRODUCTS CO.
6240 OGDEN AVE.
BERWYN (Chicago Sub.) ILLINOIS

Circle No. 88 on Reader Service Card

HUPP CORP. PERFECTION MERGER APPROVED

The directors of Hupp Corp. and Perfection Industries, Inc., in separate meetings unanimously approved an agreement for the merger of the two companies. This was announced in a joint statement by Don H. Gearheart, president of Hupp, and Donald S. Smith, president of Perfection.

The merger will result in the combined companies having a substantial diversity of products and markets. Aside from military items, Hupp is primarily a manufacturer of components for other manufacturers; Perfection is primarily a manufacturer of consumer items.

Hupp has manufacturing plants in Detroit and Chicago and is presently terminating the operations of its Globe Stamping Div. in Cleveland. Perfection has plants in Cleveland and is now establishing a plant in Waynesboro, Ga.

The business of Perfection will be continued as a division of Hupp, with Smith and the other officials of Perfection continuing to manage the affairs of that division.

CARRIER ICE MAKER CONTEST WINNERS NAMED

Harold V. Beattie, salesman for H. E. Humphreys Co., Concord, N.H., will take his wife on a 'round the world cruise after clinching first place in Carrier Corp.'s icemaker sweepstakes contest.

Regional winners in the qualifying race, who received two-week vacations and cash prizes, are: Philip E. Conrad, Simmons & Conrad, Hartsville, Pa.; Joseph D. Dailey, Omaha Fixture and Supply Corp., Omaha; Edward J. Marquez, Jr., Industries Sales Corp., New Orleans; Douglas Moat, Ace O'Hara Refrigeration Co., Phoenix.

CONNOR ADDS TWO

Starnes & Glass, Cincinnati, have been named representatives for Ohio and adjacent Pennsylvania territory for Connor Engineering Corp. residential air diffuser line, and Walter B. Stamberger, Jr., Rutherford, N. J. representative for northern New Jersey.

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted," \$4.50 minimum, limit 25 words. For all other classifications, \$8.00 minimum for 25 words or under, each additional word 25¢. Boldface type or all capitals, \$18.00 minimum for 25 words or under, each additional word 25¢. All classified advertising payable in advance.

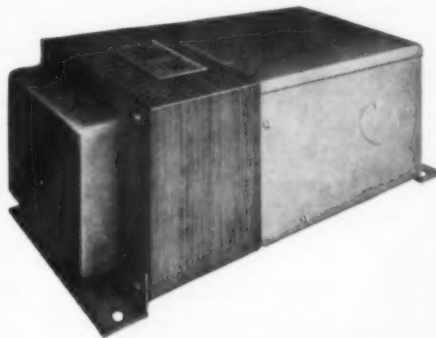
REPRESENTATIVES WANTED

REPRESENTATIVES WANTED — Agent to represent AAA-1 American firm exclusively in Canada. Specialty Refrigeration Equipment. Must have food

store, refrigeration dealer, hotel and restaurant contacts. All provinces open. List present lines carried and financial responsibility. Write Box 9155 in care of Commercial Refrigeration and Air Conditioning.

DEALERS WANTED

LEADING MANUFACTURER OF FLORIST REFRIGERATORS HAS OPENING FOR DEALERS IN THE FOLLOWING TERRITORIES: PENNSYLVANIA, NEW ENGLAND, CAROLINAS, INDIANA AND WEST COAST. PROFIT-MAKING OPPORTUNITY. BOX 9255, COMMERCIAL REFRIGERATION AND AIR CONDITIONING.



IS A

BOOST AND BUCK TRANSFORMER FOR AIR CONDITIONING APPLICATIONS

As a quick and economical method of supplying normal voltage (220, 230 or 240 volts) single phase from available under voltage circuits (197, 208 or 214 volts) this series of transformers will solve many application problems. For example, the installation of air conditioning equipment in an office or commercial building, where only lighting circuit voltage is available may require the installation of a separate circuit connected from two legs of a power line; such connection providing 208 volts single phase. This 208 voltage, not being sufficient to develop full starting torque of the 230 volt single phase motor, may cause the motor to operate constantly on starting windings and this would result in overheating and possible burn out.

The Boost and Buck series of transformers are essentially 4 winding insulated transformers in which the separate windings are interconnected so as to provide the same voltage tapping characteristics as an auto transformer. In effect the secondary winding voltage is added to the input voltage thus boosting the output 5% or 10% as desired. In addition the load capacity of the transformer is compounded in relation to its multiplied output voltage.

WRITE FOR CATALOG BB-199

ACME ELECTRIC CORPORATION

829 WATER STREET

CUBA, NEW YORK

West Coast Engineering Laboratories: 1375 West Jefferson Blvd., Los Angeles, Calif.
In Canada: Acme Electric Corp. Ltd., 50 Northline Road, Toronto, Ont.

Acme  **Electric**
TRANSFORMERS

INDEX TO ADVERTISERS

September, 1955

A

Acme Electric Corp.	119
Airtemp Div., Chrysler Corp.	31, 70
Alco Valve Co.	1
Allin Mfg. Co.	105
American Automatic Ice Machine Co.	22
American Brass Co.	20, 67
American Motors Corp., Kelvinator Div.	97
Anemostat Corp. of America	87-88
Ansul Chemical Co.	30
A-P Controls Corp.	Cover 3

B

Barr Mfg. Co.	57
Bonney Forge & Tool Works	101
Brunner Mfg. Co.	2
Bush Mfg. Co.	32

C

Carrier Corp.	33
Century Electric Co.	12-13
Chase Brass & Copper Co.	59
Coldin Cabinet Co., Inc.	115
Commercial Credit Corp.	5
Conner Engineering Corp.	27
Copeland Refrigeration Corp.	Cover 2
Cornell-Dubilier Electric Corp.	91
Curtis Refrig. Machine Div., Curtis Mfg. Co.	38

D

Detroit Controls Corp.	19
Dow Chemical Co.	16-17
Drayer-Hanson, Inc., Sub. of National-U. S. Radiator Corp.	85

E

E. I. Du Pont de Nemours & Co., Inc. Kinetic Chemicals Div.	40
Electric Auto-Lite Co.	105

F

Fine Products Co.	118
Flexible Tubing Corp.	4
Frick Co.	79

G

Garman Co.	94
General Chemical Div., Allied Chemical & Dye Corp.	6-7
General Tire & Rubber Co.	96

H

Handy & Harmon	113
Heat-Timer Corp.	86
Highside Chemicals Co.	29
S. A. Hirsh Mfg. Co.	61
Holsclaw Bros., Inc.	114

I

Imperial Brass Mfg. Co.	41
-------------------------	----

J

Jamison Cold Storage Door Co.	24
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.	43
Jarrow Products	102
Johns-Manville	29

K

Kelvinator Div., American Motors Corp.	97
Kinetic Chemicals Div., E. I. Du Pont de Nemours & Co., Inc.	40
Koch Supplies	64
Kold-Hold Div., Tranter Mfg., Inc.	63
Kramer Trenton Co.	99

L

Larkin Coils, Inc.	106
Lehigh Mfg. Co.	34
Linde Air Products Co., Unit of Union Carbide & Carbon Corp.	39, 118

M

M-B Mfg. Co.	104
Maid-O-Mist, Inc.	86
Jas. P. Marsh Corp.	14
McCabe-Powers Auto Body Co.	103
McIntire Co.	90
Madine Mfg. Co.	35
Goodloe E. Moore, Inc.	58
Mueller Brass Co.	53

P

Paragon Electric Co.	65
Peerless of America, Inc.	68
Penn Brass & Copper Co.	93
Penn Controls, Inc.	44
Pinnacle Equipment Corp.	58
Pyramid Instrument Co.	42

R

Radio Corp. of America	37
Ranco, Inc.	116
Refrigeration Engineering, Inc.	25
Revere Copper & Brass, Inc.	46
Rotary Seal Co.	106
Rubax Div., Great American Industries, Inc.	9

S

Servel, Inc.	28
Sporlan Valve Co.	15
Stic Klip Mfg. Co.	86

T

Tecumseh Products Co.	92
Tenney Engineering, Inc.	60
Tulsa Canvas Products Co., Inc.	94

U

Uniflow Mfg. Co.	64
Union Carbide & Carbon Corp., Linde Air Products Co.	39, 118
United Cork Cos.	10

V

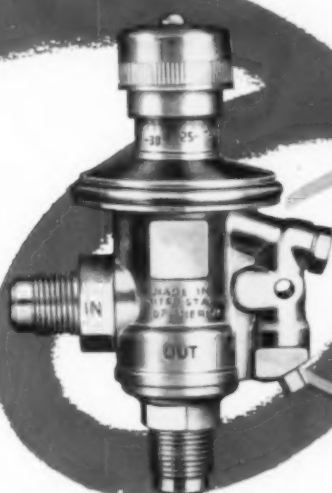
Victory Metals Mfg. Corp.	98
Virginia Smelting Co.	26, 111

W

Wagner Electric Co.	8
Wagner Tool & Supply Co.	11
A. H. Witt Co.	114
Worthington Corp.	36


NEED $\frac{1}{2}$ OR 1 TON

two temperature valve?



Model 235—Evaporator Pressure Regulating Valve — $\frac{1}{2}$ -ton F12, visual pressure setting from 0 to 40 lbs.

- Also available with 20 to 70-lb. adjustment range.
- Suitable for all refrigerants — $\frac{3}{4}$ -ton F22, Methyl and Sulphur systems.
- Single diaphragm assures instant response.
- Convenient inlet and outlet $\frac{1}{2}$ " or $\frac{5}{8}$ " SAE male flare connections.

NOW ... choose either one
and get time-saving convenience
plus famous  dependability

This pair of A-P valves is tailor-made for practically any refrigeration installation or service job. There's a choice of capacities ... a broad adjustment range plus positive protection against freezing of water cooling equipment and frosting of air coils. Profit from this application flexibility NOW!

Model 236—Evaporator Pressure Regulating Valve — 1-ton F12, adjustment range 0 to 40 lbs.

- Also available in limited range of 32 to 39 psig.
- Valve disc made of special synthetic compound for Freon service.
- $\frac{1}{2}$ " SAE male flare inlet and outlet.



ORDER FROM YOUR WHOLESALE OR WRITE:



DEPENDABLE Controls

For Air • Liquids • Gases • Refrigerants

A-P CONTROLS CORPORATION

2466 N. 32nd Street, MILWAUKEE 45, Wisconsin
 COOKSVILLE, Ontario NIJMEGEN, Holland
 For Export: 13 E. 40th Street, New York 16, N. Y., U.S.A.

EXTRA READERSHIP

FOR YOUR ADVERTISEMENT

IN THE IDEA PACKED NOVEMBER ISSUE

COMMERCIAL REFRIGERATION & AIR CONDITIONING'S

■ 1955-56 NEW PRODUCTS REVIEW.

A special "New Products Review" section featuring information on more than 300 new products introduced to the Air Conditioning and Refrigeration markets during the first six months of 1955.

■ **COMPLETE GUIDE** to the show, with an index to actual exhibits.

■ **COMPLETE PROGRAMS** of the various industry associations that will meet in Atlantic City during the November 28-December 1 show period.

■ **BONUS DISTRIBUTION** to the more than 15,000 persons attending the show.

Reader interest and buying action is always highest at show time. Your advertisement in the November show issue of Commercial Refrigeration & Air Conditioning will reach the men you want to sell at a time when they are most receptive for new lines of equipment. Be sure your advertisement is in this issue. Space reservations should be made as soon as possible.

CLOSING DATE OCTOBER 1.

COMMERCIAL REFRIGERATION & AIR CONDITIONING

1240 ONTARIO STREET

•

CLEVELAND 13, OHIO

SALES OFFICES

NEW YORK
Room 803
60 East 42nd St.
New York 17, N.Y.

CHICAGO
Suite 1613-1615
520 N. Michigan
Chicago 11, Ill.

LOS ANGELES
Room 1003
3460 Wilshire Blvd.
Los Angeles 5, Calif.

LONDON, ENG.
31 Palace Street
Westminster
London, S.W.1, Eng.

TOKYO, JAPAN
No. 1 Shiba Park 7-Gochi
Minato-Ku
Tokyo, Japan